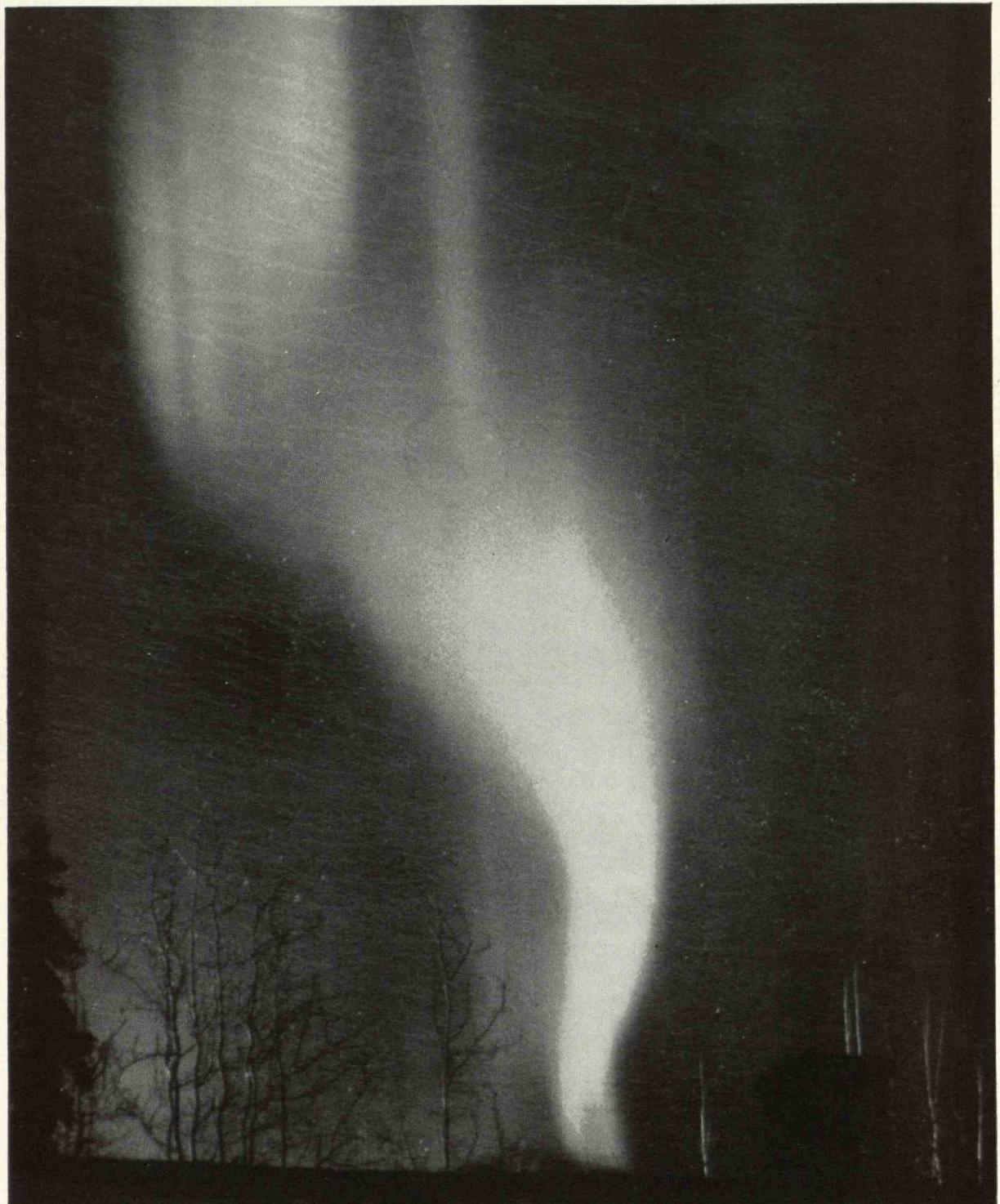


# Technology Review



FEBRUARY 1960

*Staying Ahead in Textiles* by Edward R. Schwarz page 21

# technology review

Published by MIT

This PDF is for your personal, non-commercial use only.

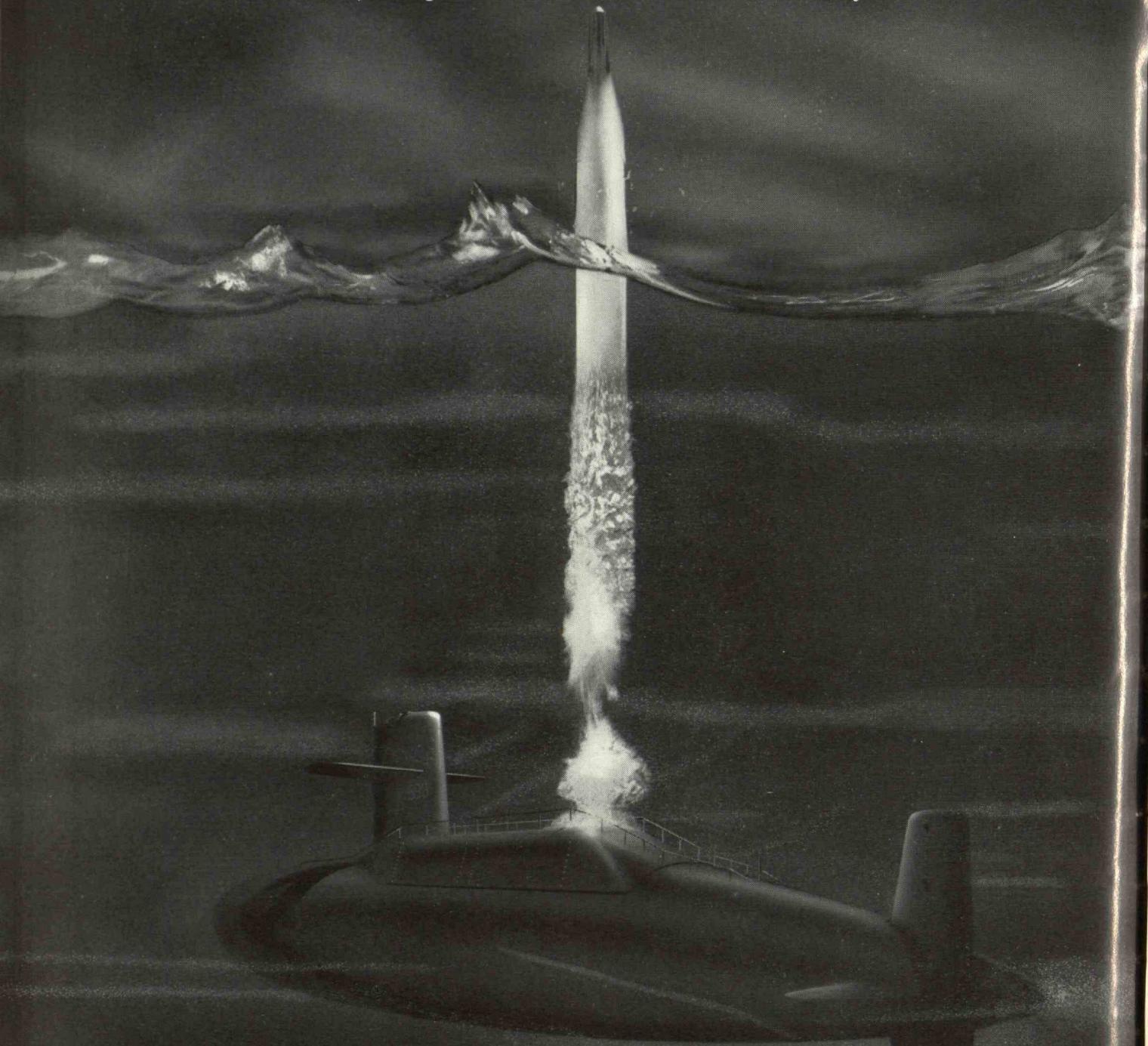
Distribution and use of this material are governed by copyright law.

For non-personal use, or to order multiple copies please email  
[permissions@technologyreview.com](mailto:permissions@technologyreview.com).

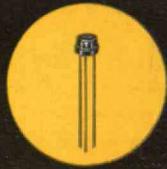
**wherever there's electronics...**

**there's Transitron**

From below the sea, launched from a nuclear submarine, the Polaris missile will streak hundreds of miles through the skies directly to its target. Transitron's tiny, super-reliable semiconductors play a major part in launching and guiding Polaris through water, sky and to final destination. At Transitron, more than 4000 skilled employees are working constantly and exclusively to develop high quality silicon and germanium semiconductors. In missiles as in radar computers, atomic subs, communications, jets and thousands of other military and commercial applications — wherever electronics . . . there's Transitron, leading the field in advanced semiconductor reliability.



TRANSISTORS • DIODES • RECTIFIERS • SWITCHES • REGULATORS • REFERENCES

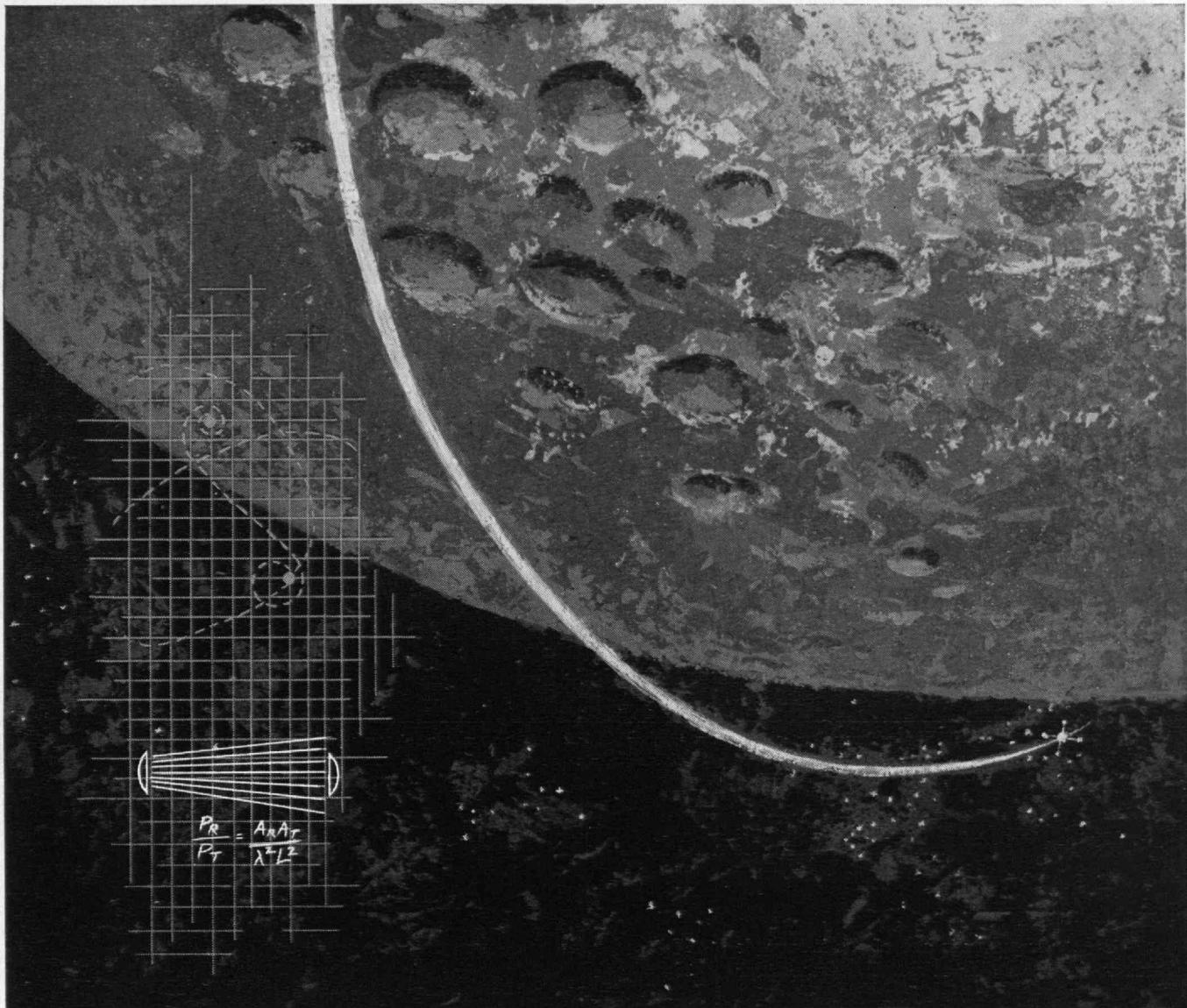


**Transitron**

electronic corporation • wakefield, massachusetts



SALES OFFICES IN PRINCIPAL CITIES THROUGHOUT THE U. S. A. • CABLE ADDRESS: TRELCO



## What's ahead for you... after you join Western Electric?

Anywhere you look — in engineering and other professional areas — the answer to that question is *progress*. For Western Electric is on a job of ever-increasing complexity, both as the manufacturing and supply unit of the Bell System *and* as a part of many defense communications and missile projects.

These two assignments mean you'll find yourself in the thick of things in such fast-breaking fields as microwave radio relay, electronic switching, miniaturization and automation. You may engineer installations, plan distribution of equipment and supplies. Western also has need for field engineers, whose world-wide assignments call for working with equipment we make for the Government. *The opportunities are many — and they're waiting!*

You'll find that Western Electric is career-minded . . . and *you*-minded! Progress is as rapid as your own individual skills permit. We estimate that 8,000 supervisory jobs will open in the next ten years — the majority to be filled by engineers. There will be corresponding oppor-

tunities for career building within research and engineering. Western Electric maintains its own full-time, all-expenses-paid engineering training program. And our tuition refund plan also helps you move ahead in your chosen field.

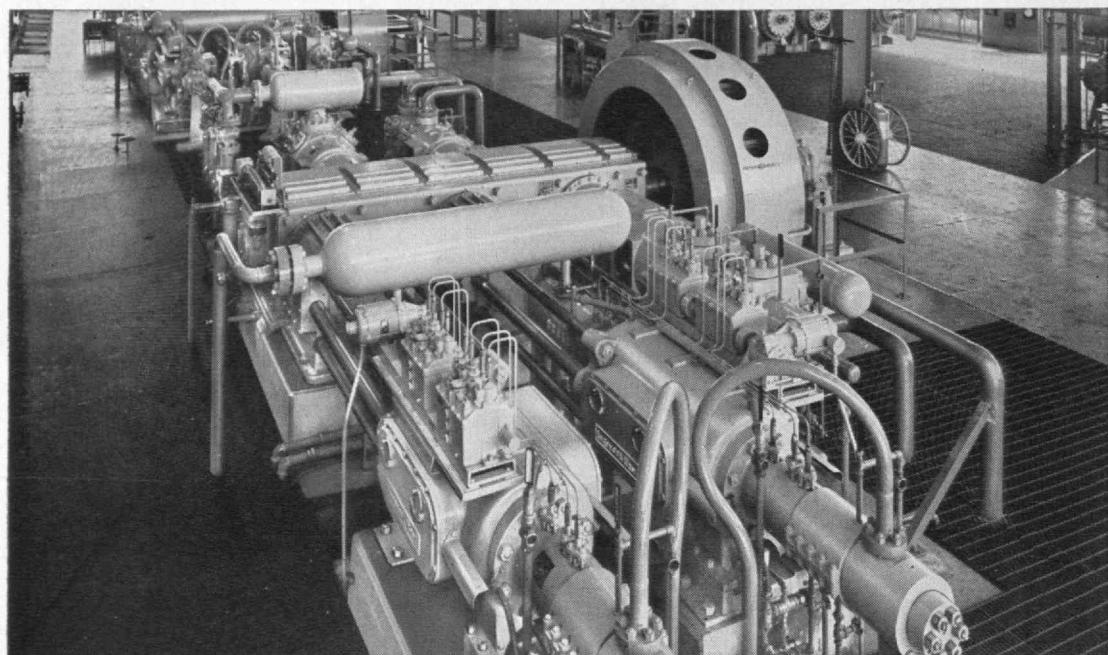
Western Electric's needs include electrical, mechanical, chemical, civil and industrial engineers, as well as men in the physical sciences. You can get more information about Western Electric — and its many current needs for technical people — by writing College Relations, Room 200C, Western Electric Company, 195 Broadway, New York City 7, N. Y.

**Western Electric**  
MANUFACTURING AND SUPPLY UNIT OF THE BELL SYSTEM

Principal manufacturing locations at Chicago, Ill.; Kearny, N. J.; Baltimore, Md.; Indianapolis, Ind.; Allentown and Laureldale, Pa.; Burlington, Greensboro and Winston-Salem, N. C.; Buffalo, N. Y.; North Andover, Mass.; Lincoln and Omaha, Neb.; Kansas City, Mo.; Columbus, Ohio; Oklahoma City, Okla.; Engineering Research Center, Princeton, N. J.; Teletype Corp., Chicago 14, Ill. and Little Rock, Ark. Also W. E. distribution centers in 32 cities and installation headquarters in 16 cities. General headquarters: 195 Broadway, New York 7, N. Y.

YOUR ENGINEERING CAREER

with **INGERSOLL-RAND**



Seven electric-driven Ingersoll-Rand reciprocating compressors totaling 21,900 horsepower are at work in this large ammonia synthesis plant. The units in the foreground compress mixed gases to more than 12,000 pounds per square inch.

### **Here's What Compressor Engineering at Ingersoll-Rand can mean to you...**

**T**ODAY, air power is one of the industry's most vital requirements. Compressed air and gases are the "breath of life" to chemical and process industries, refineries, power plants, steel mills, manufacturing plants, mines and all types of construction jobs. Hence, compressor and blower engineering offers an exciting and ever-expanding field of challenging opportunities that are virtually industry-wide.

Ingersoll-Rand is the world's largest manufacturer of air and gas compressors and Turbo-Blowers — supplying over 1000 different sizes and types, ranging from  $\frac{1}{2}$  hp to

17,250 hp, in pressures from vacuum to 35,000 psi.

Ingersoll-Rand also manufactures pumps, rock drills, diesel and gas engines, vacuum equipment, blowers, air and electric tools and specialized industrial machinery as illustrated at the right. These products require engineering know-how in their design, manufacture and field application.

If you are looking for a leadership career with long-range job security and excellent opportunities for advancement, you'll find it at Ingersoll-Rand. For further details, contact your Placement Office, or write to Ingersoll-Rand, 11 Broadway, New York 4.

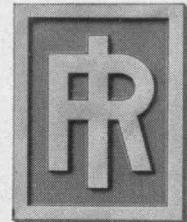
#### **OPPORTUNITIES for ENGINEERS NOW AVAILABLE:**

- Sales Engineering
- Design Engineering
- Research And Development
- Production Engineering
- Business Engineering

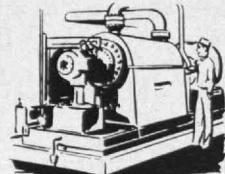
# **Ingersoll-Rand**

1-711

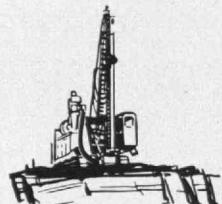
11 Broadway, New York 4, N. Y.



also means  
**LEADERSHIP**  
in



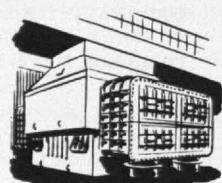
Centrifugal Pumps



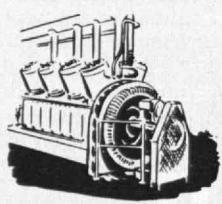
Rock Drills



Air & Electric Tools



Steam Condensers



Diesel & Gas Engines

Among the many graduates of Massachusetts Institute of Technology at Ingersoll-Rand are:  
L. C. Hopton, 1926, President; J. Bentley, 1925, Vice-President.

# Technology Review

Reg. U.S. Pat. Off.

Volume 62, Number 4

Edited at the Massachusetts Institute of Technology

February, 1960

## Feedback

### The Cross-Country Team

FROM J. N. STEPHENSON, '09:

The Coaches' Report in your November issue — as well as other items — interested me. But I was disappointed to see no mention of a Cross-Country Team. This is probably due to lack of any "country" within a few hours' journey.

We used to have a lot of fun on Hare and Hounds runs, and some of the boys did quite well on the M.I.T. Cross-Country Team and as milers and two-milers.

*Pulp & Paper Magazine  
Gardenvale, Quebec*

Arthur E. Farnham, Jr., cross-country coach, reports that 13 runners competed on the 1959 varsity team. Competition at a four-mile distance was held with Boston College, Bates, Brandeis, University of New Hampshire, Springfield, Williams, Tufts, Northeastern, Coast Guard Academy, and Wesleyan. The team had four wins and seven losses. M.I.T. also was the only New England university represented on the National Collegiate Cross-Country Championships at Wheaton, Ill., and finished 11th in that race.

On the Freshmen Team, eight runners competed against other schools, and recorded three wins, five losses. The frosh running distance is 2½ miles.

### Kind Words Dept.

FROM THOMAS C. DESMOND, '09:

Please accept my hearty congratulations on the several excellent and new features of the November, 1959, issue of The Technology Review.

*Newburgh, N.Y.*

FROM JACK HERLIHY, '11:

I like the new Review.  
*Medford, Mass.*

FROM MARTIN T. MEYER, '32:

I was very pleased with the new type and new format of The Technology Review . . . It is much more readable and is easy to find those articles in which one is interested.

*Philadelphia, Pa.*

The Review's staff is grateful for these and other comments on recent changes in the magazine. The new typography is the work of Mrs. Jacqueline Casey and Ralph M. H. Coburn, '47, of the M.I.T. Office of Publications.



**KENZO TANGE** visited the Department of Architecture this year. Pictures of his work are on pages 24 and 25.

**EDITOR:** Volta Torrey; **BUSINESS MANAGER:** R. T. Jope, '28; **CIRCULATION MANAGER:** D. P. Severance, '38; **EDITORIAL ASSOCIATES:** J. J. Rowlands, Francis E. Wylie, John I. Mattill; **EDITORIAL STAFF:** Ruth King, Diana de Filippi; **BUSINESS STAFF:** Madeline R. McCormick, Louise E. Ryan; **PUBLISHER:** H. E. Lobdell, '17.

The Technology Review is published monthly from November to July inclusive, on the 27th day of the month preceding the date of issue, by the Alumni Association of M.I.T.; Edward J. Hanley, '24, President; H. E. Lobdell, '17, Executive Vice-president; William W. Garth, Jr., '36, William L. Taggart, Jr., '27, Vice-presidents; Donald P. Severance, '38, Secretary-Treasurer.

Copyrighted, 1960, by the Alumni Association of M.I.T.

Editorial and business offices are in Room 1-281, Massachusetts Institute of Technology, Cambridge 39, Mass. The Review is published at Hildreth Press, Inc., Emmett Street, Bristol, Conn.

An annual subscription in the U.S. is \$4.00; in Canada and elsewhere, \$4.50; a single copy, 60 cents. Three weeks must be allowed to effect a change of address, for which both the old and the new address should be given.

Entered as second-class matter December 23, 1949, at the Post Office, at Bristol, Conn., under the Act of March 3, 1879. Accepted for mailing at special postage rates provided for in Section 538, P. L. & R. Act of February 28, 1925.

### This Month

#### *The Cover*

The photograph on the cover was taken on Eastman Tri-X film by Victor P. Hessler, Research Professor in the Geophysical Institute at the University of Alaska. To see an aurora on radar, turn to page 17.

#### *Individuals Noteworthy*

4

The M.I.T. Corporation names a new Secretary and Honorary Secretary.

#### *The Trend of Affairs*

15

Brief reports on many programs, and plans for an industrial research center near M.I.T.

#### *Staying Ahead in Textiles*

21

Edward R. Schwarz, '21, recalls early work and cites new trends.

#### *Japanese Architecture*

24

Some of Kenzo Tange's buildings in photographs.

#### *Duty of the Intellectual*

26

Institute Professor Norbert Wiener comments on recent TV news.

#### *Institute Yesteryears*

28

Items that were news 25, 50, 75 and 99 years ago at M.I.T.

#### *Racing in a Parking Lot*

30

A new intercollegiate sport.

#### *When Your Lab Is an Ocean*

31

William T. Struble describes a student's life at Woods Hole.

#### *Electronic Trap in the Andes*

33

High-energy cosmic-ray showers are caught at a new station.

#### *Should Students Marry?*

34

Margaret Mead questions the compatibility of college and wedlock.

#### *Talk of Our Times*

48

Samuel A. Goldblith, '40, speaks on menus for space travelers.

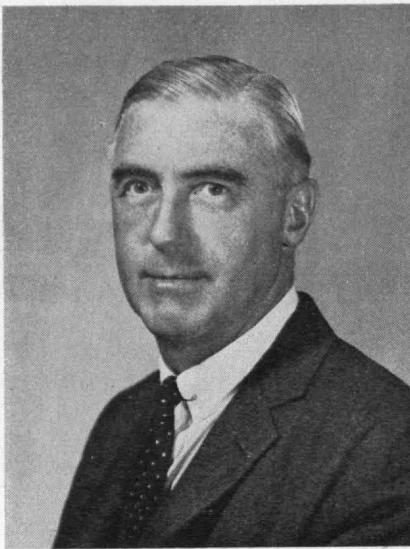
#### *Books*

52

# Individuals Noteworthy



Walter Humphreys, '97



John J. Wilson, '29

## Honorary Secretary

UPON concluding a span of 30 years as Secretary of the Institute Corporation, Walter Humphreys, '97, has been named the first Honorary Secretary of that body; and

John J. Wilson, '29, has been chosen as its new active Secretary.

Mr. Humphreys became a member of the Institute's instructing staff shortly after graduation, and served as Registrar from 1902 to 1922. In 1923, he was elected an

Alumni Term Member of the Corporation, and later, in 1929, to Life Membership.

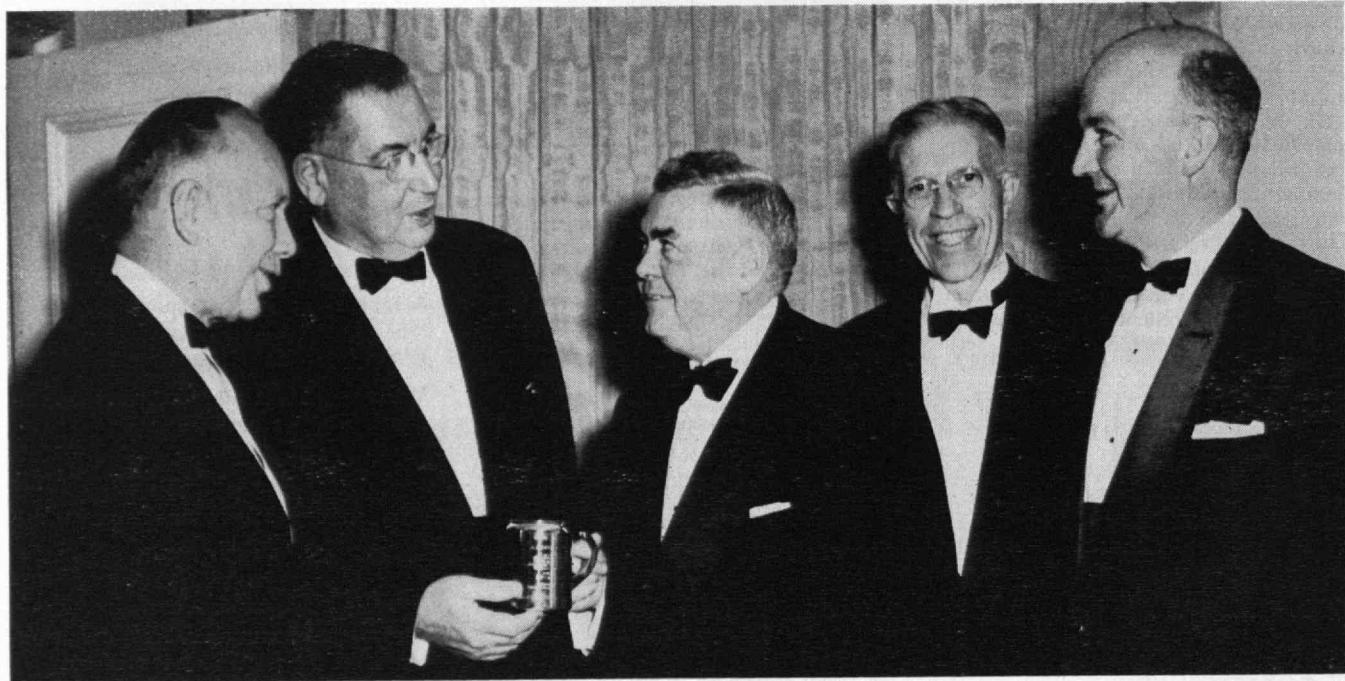
Both he and Mr. Wilson have held office in the Alumni Association: Mr. Humphreys was its 9th Secretary-Treasurer from 1907 to 1923; and Mr. Wilson was a Vice-president during 1955-1957 and its 65th President in 1958-1959.

Mr. Humphreys was the *Technology Review's* second editor in 1899, and in 1925 he became the second recipient of the distinction of being an Honorary Member of the Alumni Council.

Mr. Wilson, a member of the Alumni Council since 1950, served during 1952-1958 as 1929's Class Agent of the Alumni Fund, and he is now a member of the Fund Board. He was an ex-officio member of the Corporation while President of the Alumni Association, and in June of last year was elected an Alumni Term Member of that body.

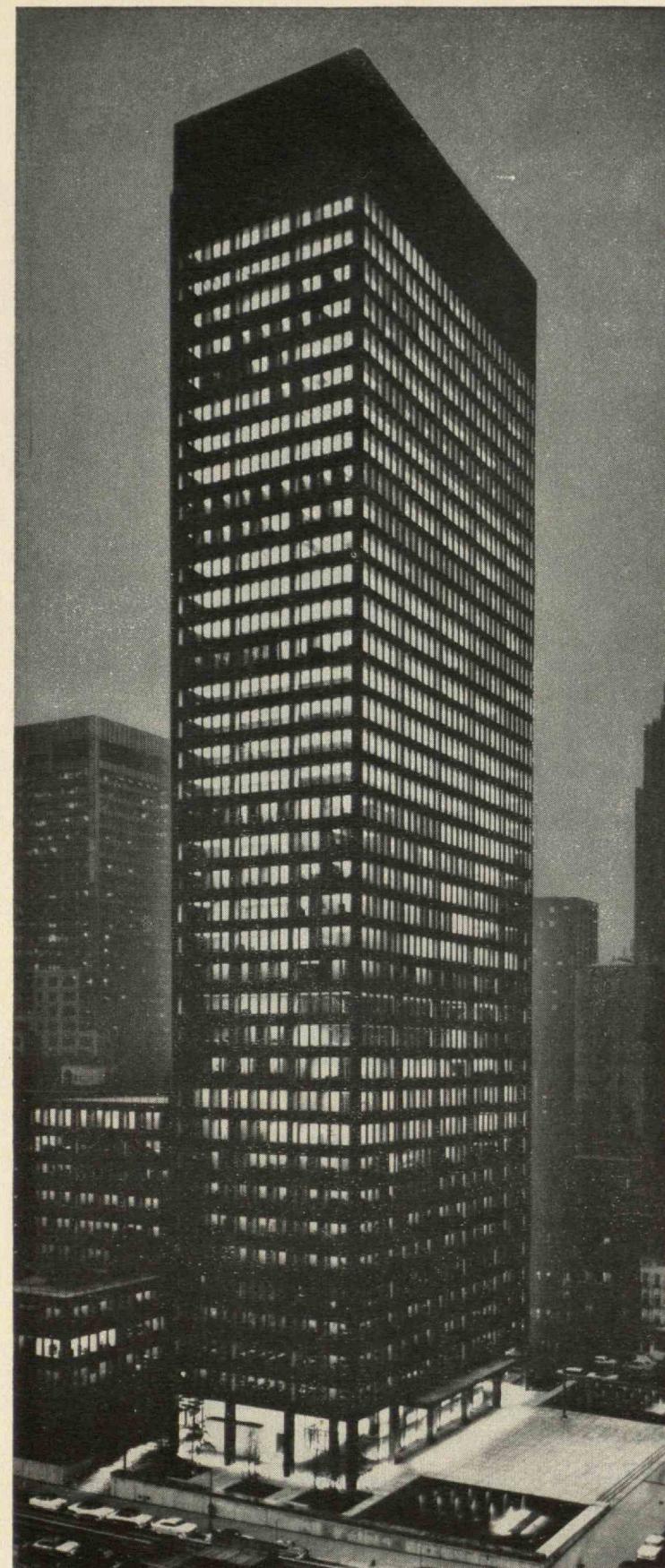
Organizer of the Doelcam Corporation in 1946, Mr. Wilson was its Chairman and President until 1954, and upon the merger of Doelcam and the Minneapolis-Honeywell Regulator Company he became Vice-president of Minneapolis-Honeywell and later Presi-

(Continued on page 6)



AT THE SILVER STEIN DINNER DANCE of the M.I.T. Clubs of New York and Northern New Jersey, held December 2 in the Grand Ballroom of the Hotel Biltmore. Left to right: M.I.T. President J. A. Stratton, '23; C. George Dandrow, '22, toastmaster; Alfred T. Glassett, '20, recipient of

the 1959 Stein Award; Senator Thomas C. Desmond, '09; and Edward C. Edgar, '35, President of the M.I.T. Club of New York. Messrs. Dandrow and Desmond were previous recipients of the Silver Stein; and they, with Mr. Glassett, are Past Presidents of the Alumni Association.



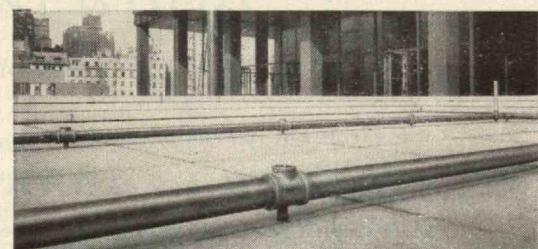
*FROM THE GROUND UP...*

## World's First Bronze Skyscraper Uses Phelps Dodge Red Brass Pipe!

A vital network of Phelps Dodge Red Brass Pipe—roughly 17 miles of it—runs through the magnificent new bronze office building at 375 Park Avenue in New York. From street level to the top of this striking skyscraper, the maze of piping carries the hot and cold water needed for the 38-story structure's mammoth plumbing system.

A number of especially designed water fixtures, including a unique central drinking water system, are connected to these Phelps Dodge pipes. Other PD pipes under the park plaza supply water to the graceful fountains and pools in front of the building.

Plumbing contractors know that the famous Phelps Dodge "Mine-to-Market" quality line of copper tube and pipe more than meets every requirement for modern plumbing systems. That's why they specify Phelps Dodge for every kind of installation—from skyscrapers to homes!



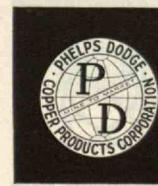
Red brass pipe in pool bottoms on building plaza furnishes water for beautiful fountain displays.

*Quality tube sold the quality way—through  
authorized wholesalers!*

**PHELPS DODGE COPPER PRODUCTS**

C O R P O R A T I O N

New York, N.Y. • Los Angeles, Calif.



**P D**



## LINCOLN LABORATORY

invites inquiries from persons  
with superior qualifications.

**SOLID STATE Physics, Chemistry, and Metallurgy**

**RADIO PHYSICS and ASTRONOMY**

**NEW RADAR TECHNIQUES**

**COMMUNICATIONS:**

Techniques

Psychology

Theory

**INFORMATION PROCESSING**

**SYSTEMS:**

Space Surveillance

ICBM Detection and Tracking

Strategic Communications

Integrated Data Networks

**SYSTEM ANALYSIS**

Research and Development

**LINCOLN LABORATORY**

Massachusetts Institute of Technology

BOX 28

LEXINGTON 73, MASSACHUSETTS



## Individuals Noteworthy

(Continued from page 4)

dent of the Datamatic Corporation, from which positions he retired in 1957. He is a director of Minneapolis-Honeywell, Second Bank-State Street Trust Company of Boston, The Electronic Trust, Ltd. [London], Associated Industries of Massachusetts, and the Greater Boston Chamber of Commerce; and a member of the advisory board of Colonial Energy Fund. He is a trustee of Peter Bent Brigham Hospital, and a member of the Corporation of the Children's Hospital and the Boston Museum of Science.

### Arthur R. Davis: 1891-1959

A MEMBER of the M.I.T. Faculty from 1930 until his retirement two years ago, Arthur Randall Davis, Associate Professor of Inorganic Chemistry, Emeritus, died last December 12 at his home in West Medford, Mass.

Born in Augusta, Maine, he received his B.A. degree from Connecticut Wesleyan University in 1915. He served for eight years on the faculty of Middlebury College, where he became professor and acting head of the chemistry department. In 1923 he entered Harvard University, where he received his M.A. and Ph.D. degrees in 1925 and 1930 respectively, and served for five years as instructor in charge of the first-year chemistry laboratory. He joined the M.I.T. Faculty as instructor and became assistant professor in 1935 and associate professor in 1941. He was a member of the American Chemical Society and the New England Chemistry Teachers Association.

Dr. Davis is survived by his wife, Katherine Eaton Davis; a son, John G. Davis of Lawrenceville, N.J.; and a daughter, Mrs. Barbara Plumley of Rutland, Vt.

### Dean's Assistant

APPOINTED recently as Assistant to the Dean of the School of Engineering, William W. Seifert, '47, Associate Professor of Electrical Engineering, will provide liaison between the Dean's Office and the Faculty of the School incidental to the Ford Foundation program, and also continue to teach.

(Concluded on page 8)



... a hand in things to come

## Reaching into a lost world ... for a plastic you use every day

Massive creatures once sloshed through endless swamps, feeding on huge ferns, luxuriant rushes and strange pulp-like trees. After ruling for 100 million years, the giant animals and plants vanished forever beneath the surface with violent upheavals in the earth's crust. Over a long period, they gradually turned into great deposits of oil and natural gas. And today, Union Carbide converts these vast resources into a modern miracle—the widely-used plastic called polyethylene.

Millions of feet of tough, transparent polyethylene film are used each year to protect the freshness of perishable foods such as fruits and vegetables. Scores of other useful things are made from polyethylene . . . unbreakable kitchenware, alive with color . . . bottles that dispense a fine spray with a gentle squeeze . . . electrical insulation for your television antenna, and even for trans-oceanic telephone cables.

Polyethylene is only one of many plastics and chemicals that Union Carbide creates from oil and natural gas. By constant research into the basic elements of nature, the people of Union Carbide bring new and better products into your everyday life.

Learn about the exciting work going on now in plastics, carbons, chemicals, gases, metals, and nuclear energy. Write for "Products and Processes" Booklet H, Union Carbide Corporation, 30 E. 42nd St., New York 17, N. Y. In Canada, Union Carbide Canada Limited, Toronto.

**UNION  
CARBIDE**

... a hand  
in things to come



Donald W. Douglas, Jr., President of Douglas, discusses the ground installation requirements for a series of THOR-boostered space probes with Alfred J. Carah, Chief Design Engineer

## *The care and feeding of a missile system*

It takes more than pressing a button to send a giant rocket on its way. Actually, almost as many man-hours go into the design and construction of the support equipment as into the missile itself. A leading factor in the reliability of Douglas missile systems is the company's practice of including all the necessary ground handling units, plus detailed procedures for system utilization and crew training. This complete job allows Douglas missiles to move quickly from test to operational status and perform with outstanding dependability. Current missile and space projects include THOR, ZEUS, DELTA, ALBM, GENIE and others of vital national importance.

We invite qualified engineers, physicists, chemists and mathematicians to join us to help further these and future programs. Write to C.C. LaVene, Douglas Aircraft Company, Santa Monica, California, Section N.



MISSILE AND SPACE SYSTEMS ■ MILITARY AIRCRAFT  
DC-8 JETLINERS ■ CARGO TRANSPORTS ■ AIRCOMB  
GROUND SUPPORT EQUIPMENT

## Individuals Noteworthy

(Concluded from page 6)

Professor Seifert was graduated from Rensselaer Polytechnic Institute in 1941 and was an instructor in electrical engineering there until he came to M.I.T. in 1944. He was a research associate in the Dynamic Analysis and Control Laboratory until 1951, when he became its Assistant Director. In 1957, he transferred to the Electronic Systems Laboratory where he has been active in research and teaching. His technical interests are in computation and in control of time-varying and nonlinear systems.

## New Posts

NAMED in the news recently were the Alumni and members of the Faculty whose elections, promotions, and appointments are recorded below:

*Robert E. Wilson, '16, and James H. Doolittle, '24, as members of Plowshare Advisory Committee, Atomic Energy Commission . . . John A. Lunn, '17, as a Director, American Research and Development Corporation . . . Philip T. Coffin, '21, as General Manager, Structural Division, Aluminum Company of America;*

*Roy G. Rincliffe, '23, as President, Association of Edison Illumi-*

nating Companies . . . James S. McDonnell, Jr., '25, as Chairman, the Board of Governors, Aerospace Industries Association . . . James R. Killian, Jr., '26, as a Director, Polaroid Corporation;

*Robert M. Bigelow, '27, as a Vice-president and Director, United Shoe Machinery Corporation . . . Everard M. Lester, '28, as Director of Manufacturing, Government Products Group, American Machine and Foundry Company . . . George G. Cudhea, '29, as Manager of Marketing, Rocket Engine Section, General Electric Company;*

*Paul F. Genaghte, '33, as a Director, Homestake Mining Company . . . Robert H. Winters, '33, as Chairman, Board of Governors, York University, Toronto, Ont. . . Charles R. Holman, '36, as Plant Manager, Pittsburgh Plate Glass Company, Springdale, Pa.;*

*Scott W. Walker, '40, as Dean of the College of Petroleum Sciences and Engineering, University of Tulsa . . . William L. Sammons, '43, Vice-president, B-I-F Industries, Inc., Providence, R.I.;*

*Robert H. Bliss, '48, as Manager of Automatic Fastening Tool Department, Industrial Sales Division, United Shoe Machinery Corporation . . . Norman B. Champ, '50, as a director, Midwest Piping Company, Inc., St. Louis, Mo.*

## Honors

MEDALISTS and recent recipients of other awards include:

*W. H. McAdams, '17, the 1959 Founders Award, by The American Institute of Chemical Engineers . . . Adolph L. Antonio, '37, the grade of Fellow, by the American Rocket Society . . . Martin Deutsch, '37, an honorary doctorate, by the University of Algiers . . . Robert Coldwell Wood, Associate Professor of Political Science, the Fruin-Colnon Award, by the National Municipal League.*

## DSR Appointment

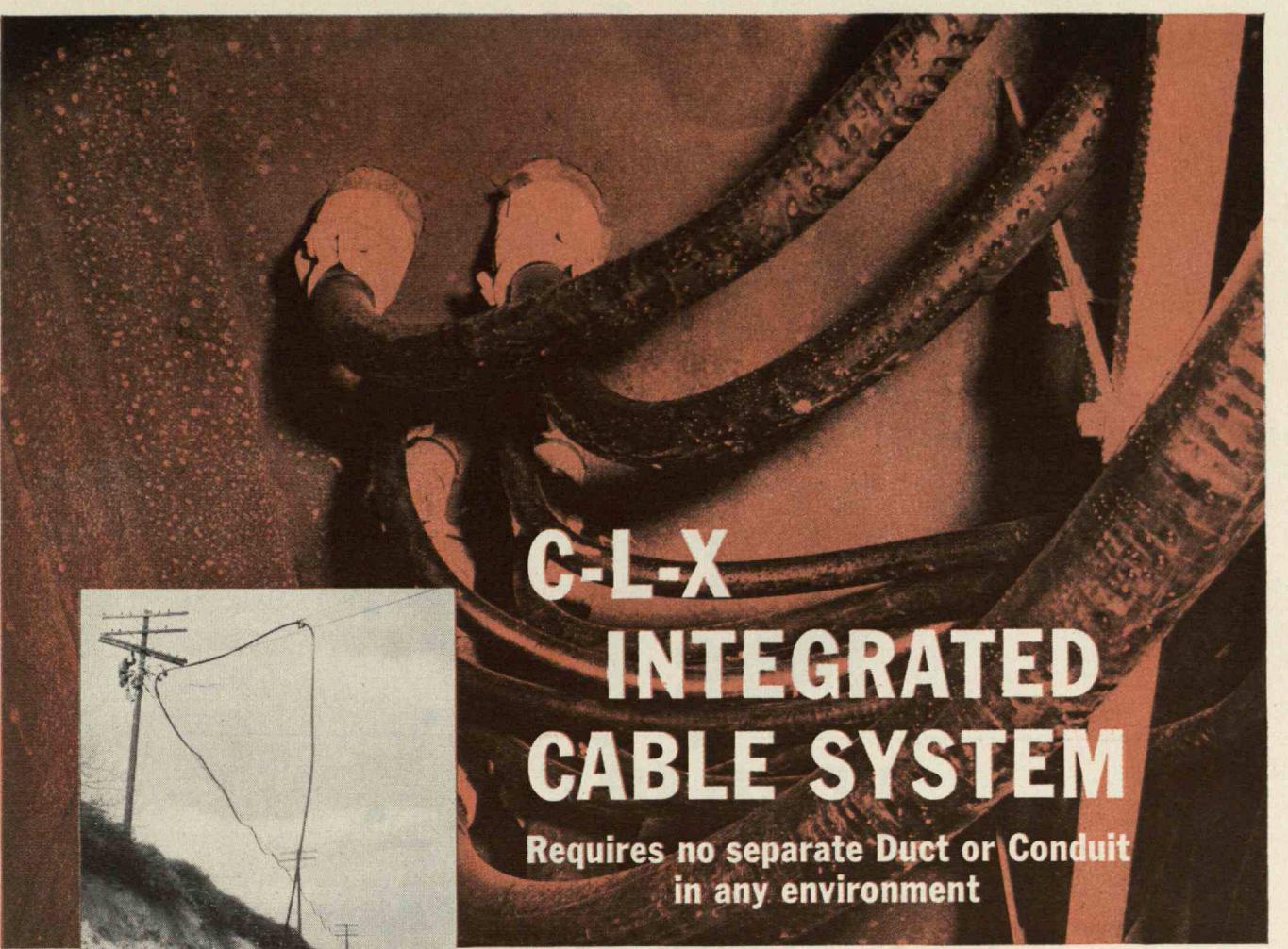
JOHN P. DONAHUE has been named Associate Director of the M.I.T. Division of Sponsored Research. He came to M.I.T. in 1953 from Northeastern University to join the Research Fiscal Office. Last year he received his bachelor of laws degree from Boston College.



### *The difficult or unusual*

Whether it be speed, difficult conditions or complex detail, ingenuity can solve it. We have proved this on numerous projects.

**W. J. BARNEY CORPORATION**  
Founded 1917  
INDUSTRIAL CONSTRUCTION  
101 Park Avenue, New York  
Alfred T. Glassett, '20, President



# C-L-X INTEGRATED CABLE SYSTEM

Requires no separate Duct or Conduit  
in any environment

Unusual pliability of C-L-X Sheathed Cables is shown here as the cable is being installed.



The revolutionary C-L-X Continuous, Corrugated, Lightweight, metallic sheath, that Simplex introduced to this country two years ago, is now available in *Aluminum*, *Copper* or *Bronze* as well as the enormously successful *Steel*.

Simplex C-L-X pliable cable systems provide unexcelled ease of installation and mechanical protection.

The *corrugated* metal sheath combines pliability for ease of installation with very great strength and seals the cable against penetration by oil, chemicals and moisture.

Depending on the environmental conditions of the installation, these power, control and communication cable systems can be furnished with or without plastic jacketing.

Light, and pliable, C-L-X cables are easily installed, and require no special reels.

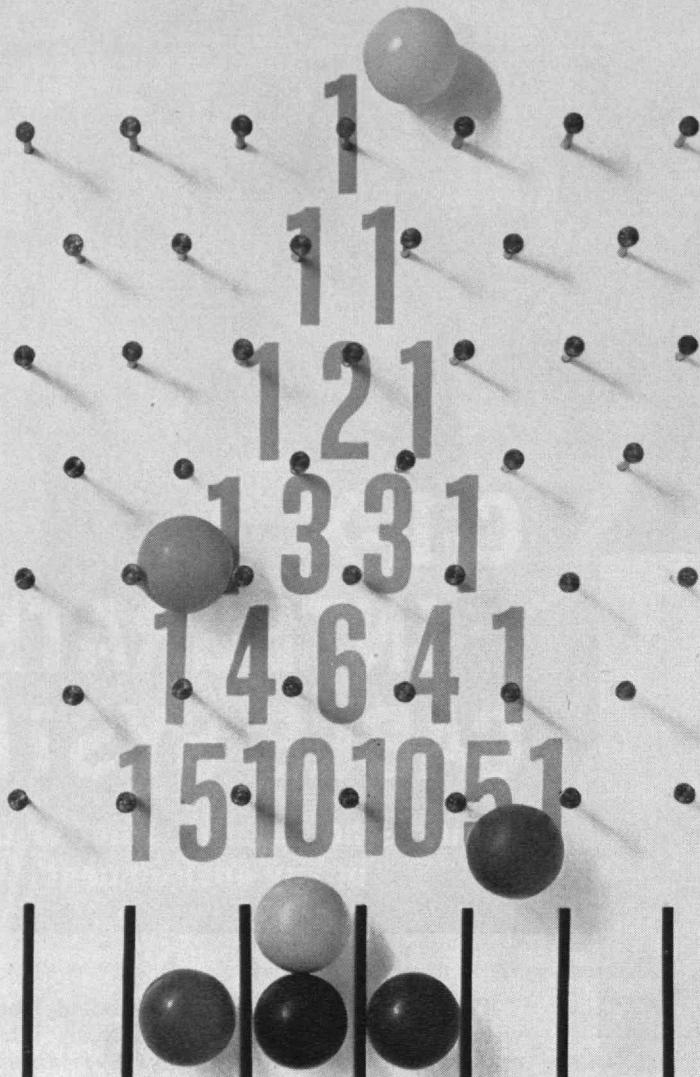
Now, with corrugated *Aluminum*, *Copper* or *Bronze* sheathed C-L-X cable systems, the low resistance of these metals permits designs where the sheath may be used as a neutral or ground. These metals also permit the use of single as well as multiconductor cable assemblies in a-c power systems.

For complete details on C-L-X sheathed cables, contact your Simplex Engineer, or write direct.

*Simplex*  
WIRE & CABLE COMPANY

79 Sidney Street, Cambridge, Massachusetts

See C-L-X  
in Steel, Copper  
and Aluminum at  
the PLANT MAINTENANCE SHOW  
BOOTH NUMBER 212

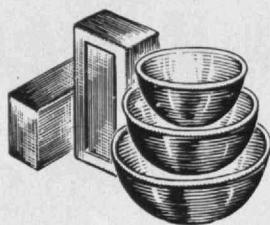


**MATHEMATICS OF CHANCE:** What are the chances that the top ball will fall into the left-hand slot? A trivial point? Not to a great mathematician. When the deeply religious Blaise Pascal answered a similar question to settle a gambler's argument in seventeenth century Paris, he gave mathematics one of its most important tasks—prediction. Using Pascal's famous triangle of numbers,\* the probable number of times that a given event will happen by pure chance can be determined. In the 300 years since then, the mathematical laws of probability have helped establish the insurance business, enable scientists to predict the molecular behavior of gases, forecast the results of cross-breeding plants or animals, analyze the value of a new serum. The mathematical insight that made all this possible is now being applied to weather forecasting, psychological testing and public opinion research. Probability has become a science that calculates in advance the chances of success of an untold number of events for man's benefit.

**IBM**<sup>®</sup>

INTERNATIONAL BUSINESS MACHINES CORPORATION

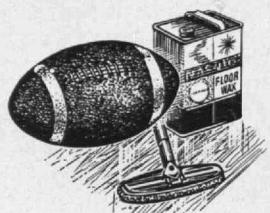
\*For example, the third line from the tip of the triangle tells us there are four different ways two coins can land: the chance of both falling heads up is 1 in 4; of one head and one tail, 2 in 4; and of two tails, 1 in 4.



... bricks or bowls



... rubbers or rugs



... footballs or floor waxes

## Better Products begin with CABOT!

The items above can only begin to hint at the enormous range of products which contain a pinch or a pound of one Cabot raw material or another.

Put it this way: no matter where you are as you read this, chances are excellent that you are within reaching distance of at least one.

That's why we're reasonably confident that among the readers of this message, there is at least one whose product or process can profit from a perusal of the list below—and a phone call to Cabot.

Perhaps it is you.

### WHICH OF THESE CABOT MATERIALS CAN HELP YOUR PRODUCT?

**CABOT CARBON BLACKS** . . . more than 50 different grades of channel, furnace and thermal blacks for use by the rubber, printing ink, paint, varnish, lacquer, enamel, plastics, paper, phonograph record, battery and other industries.

**CAB-O-LITE® (wollastonite)** . . . as a paint pigment, this versatile, uniform calcium metasilicate has more desirable properties than other extenders used singly or in combination. Excellent for all types of paint, and for quality improvement of all types of ceramics.

**CAB-O-SIL®** . . . this unique airborne silica, in extremely small quantities, greatly improves a host of products. Remarkable for its unusual combination of properties, it's equally effective as a thixo-

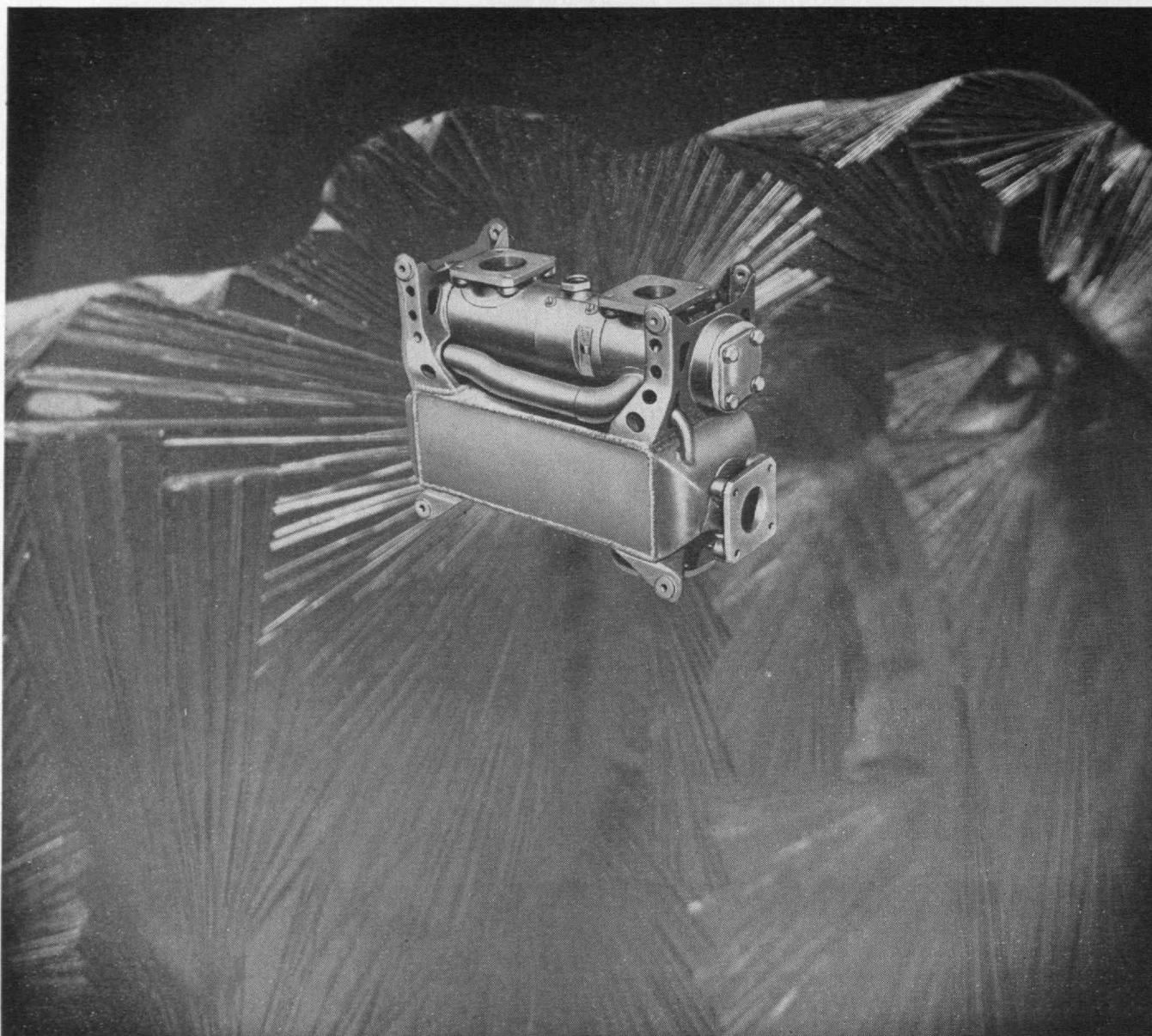
tropic, thickening, gelling, suspending, flattening, reinforcing, anti-caking and antislip agent. Used in plastics, lubricating oils, greases, paints, varnishes, lacquers, rubber, sulfur, insecticides, pharmaceuticals, cosmetics, many other products.

**PT® PINE TAR PRODUCTS** . . . these versatile quality controlled materials improve the performance of a wide variety of products, including: rubber, paint, cordage, oakum and insecticides. For complete information, phone or write:



**GODFREY L. CABOT, INC.**  
125 HIGH STREET, BOSTON 10, MASSACHUSETTS

OUT OF THE LABORATORY



**Curing Jet Fuel of Frostbite...** this fuel heater has solved the critical problem of ice formation in jet aircraft fuel systems. Because water particles cannot be entirely eliminated from jet fuel, extremely cold weather freezes these particles and stops the flow of fuel to the jet engine. Hot jet engine bleed air is used to warm the fuel circulated through the fuel heater, maintaining a temperature above that of freezing...another vital contribution by Garrett to the safety of jet flight.

• Outstanding opportunities for qualified engineers

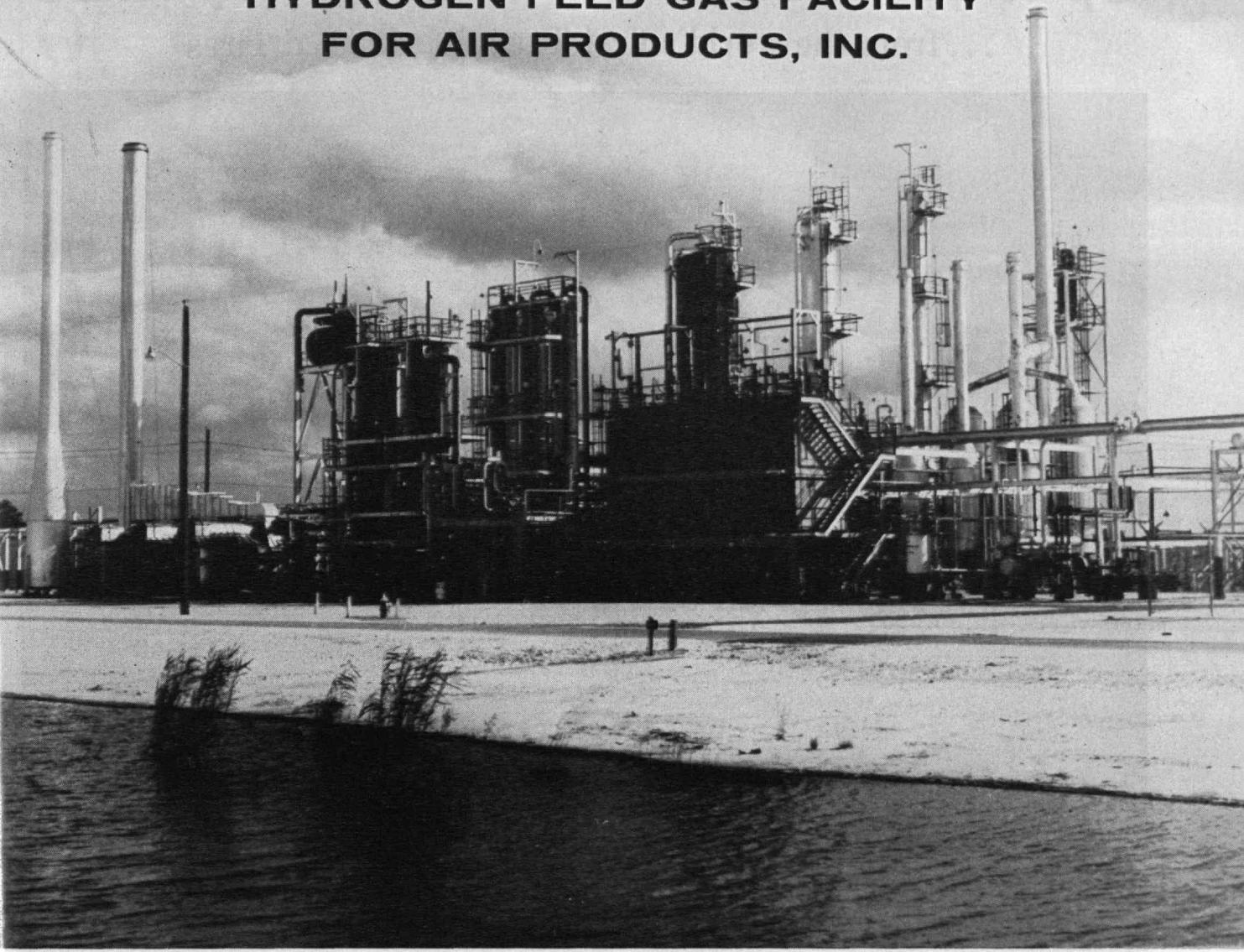


AiResearch Manufacturing Divisions

LOS ANGELES 45, CALIFORNIA • PHOENIX, ARIZONA

OTHER DIVISIONS AND SUBSIDIARIES: AIRESERCH INDUSTRIAL • AIRESERCH AVIATION SERVICE • GARRETT SUPPLY  
AIRSUPPLY-AERO ENGINEERING • GARRETT MANUFACTURING LIMITED • C. W. MARWEDEL • AIR CRUISERS

# LUMMUS DESIGNS, ENGINEERS AND CONSTRUCTS HYDROGEN FEED GAS FACILITY FOR AIR PRODUCTS, INC.



## *World's Only Large Tonnage Plant Produces Liquid Hydrogen for Use as Missile Fuel*

The world's only large tonnage liquid hydrogen facility—near West Palm Beach, Florida—has been put on-stream by Air Products, Inc. of Allentown, Pennsylvania. The Lummus-designed, engineered and constructed hydrogen production section of the plant has been producing at over-design rate and at 99+% purity (better than design) since the test run was successfully completed 21 days after the initial operation of the

gas generators.

The hydrogen production section combines Florida crude oil, oxygen and water to generate hydrogen gas.

Liquid hydrogen product from the new facility assumes an increasingly vital role in the nation's defense system. New capability in handling, storing and firing liquid hydrogen in rocket engines substantially improves our nation's position in the race for missile and space superiority.

Lummus has completed a number of gas generation units in recent years, and also has extensive experience in design, engineering and construction of plants for ammonia synthesis.

In the past 50 years, Lummus has built over 800 plants to produce petrochemicals, chemicals and petroleum products. If your company is planning facilities of this kind, discuss your plans with Lummus.



ENGINEERS AND CONSTRUCTORS FOR INDUSTRY THROUGHOUT THE WORLD

385 MADISON AVENUE, NEW YORK 17, N. Y.

NEWARK • HOUSTON • WASHINGTON, D.C. • MONTREAL • LONDON • PARIS • THE HAGUE • MADRID

# Up to 25% more safe mileage...anywhere

...from the world's first Turnpike-Proved Tires



This year, the average motorist will do more than half his driving on modern throughways, freeways and turnpikes—at high legal speeds. Above, the Pennsylvania Turnpike.



The Harbor Freeway, downtown Los Angeles.

## NEW RUBBERS!

## NEW CHEMICALS!

## NEW CORDS!

Here are the reasons why Turnpike-Proved tires by Goodyear will give you up to 25% more safe mileage:

**FIRST**, Goodyear has combined new rubbers and new chemicals into a more intimate mixture—to create a

tread compound that has far greater toughness and resistance to wear.

**SECOND**, Goodyear puts both Nylon and Rayon through an exclusive triple-temping process—to make superior 3-T Cord.

**COST?** Not one cent more than ordinary tires. You can now get new Turnpike-Proved tires by Goodyear for all cars, and in all price classes. Just see your Goodyear dealer.

# GOOD YEAR

MORE PEOPLE RIDE ON GOODYEAR TIRES THAN ON ANY OTHER KIND

Watch the award-winning "Goodyear Theater" on TV every other Monday evening. Goodyear, Akron 16, Ohio.



# Trend Of Affairs



## Our Country's Arms And Talent Problems

SOME of the reasons why America now must be a taut ship were given this winter by James R. Killian, Jr., '26, Chairman of the M.I.T. Corporation, in an address to the New England Association of Colleges and Secondary Schools.

"When we alone possessed the atomic bomb, we clearly had a supremacy deterrent to war," he pointed out. "Now it is unlikely, in this period of nuclear plenty, that a comparably superior weapon deterrent will be exclusively available in the future to either side."

"Our response is the achievement and maintenance, instead, of a really stable deterrent. We have great, perhaps superior, retaliatory strength today, but to maintain a deterrent in the years ahead, we must have ICBM's adequate in number and so hardened, dispersed and mobile that these weapons . . . would survive a surprise attack in condition to deliver an answering attack that would be unacceptably destructive."

This is a complicated strategical concept, which requires that the Soviet Union know of our strength, and makes it imperative that there be a steady advance in our military technology.

At the same time, we must be prepared to progress toward adequately controlled limitation of arms. "The array of problems associated with arms limitation," said Dr. Killian, "constitutes one of the greatest intellectual challenges of our time."

In space, he thinks, we should not compete on an item-by-item basis with the Soviets, but select our objectives carefully and imaginatively.

"The budgeting of our talent," he said, "may be more critical than the budgeting of our funds, and we must utilize all the judgment and organizational strengths we have to develop a sound list of priorities, to be tough-minded and foresighted in selecting the most important technological objectives and in concentrating our best talent on the most important and most difficult."

"We have too often fallen into the delusion that a mass attack on a technical problem is most likely to bring about its solution, that if we spend enough money and hire enough men and crash ahead, the job will get done quickly and well. Actually, experience convincingly demonstrates that brain power and good judgment, not bodies, are what really carry us ahead."

## New Research Center Will Rise Near M.I.T.

M.I.T. AND the Cabot, Cabot & Forbes Company announced this winter that they will co-operate to build a \$15,000,000 industrial research center close to the Institute. Their plans call for the erection of several buildings, including one of 12 or more stories, to provide a million or more square feet of floor space for 3,000 or so employees of firms wishing to establish laboratories, offices, and technical shops in Cambridge. Construction will start within a few months.

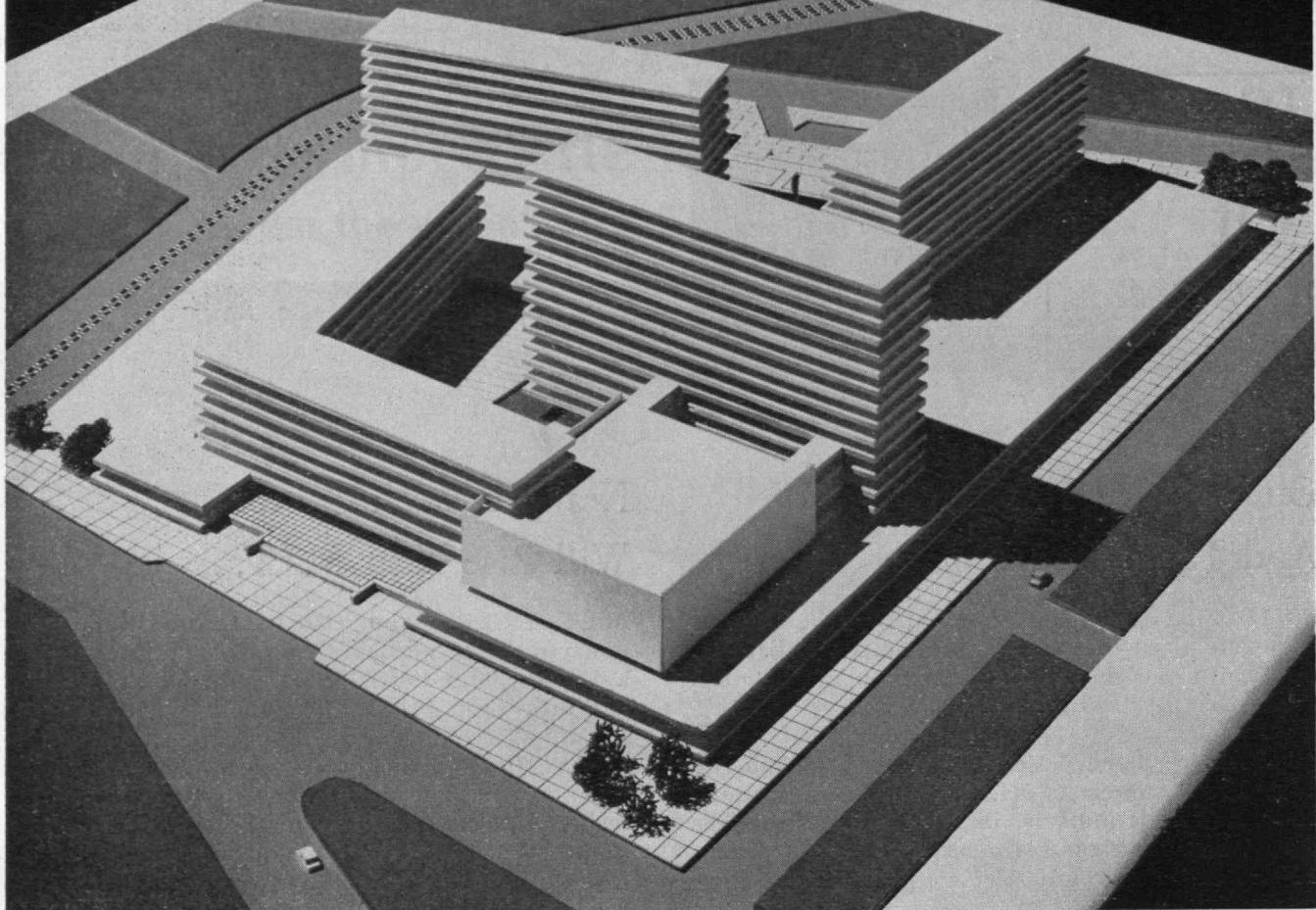
The site, within easy walking distance of the Kendall Square subway station, includes the five-acre Rogers block, which was cleared of tenements and other buildings two years ago, and nine acres now occupied by streets and the idle Lever Brothers plant, which will be razed.

The Cambridge City Council is being asked to close streets within the area, and City Manager John J. Curry has asked the Massachusetts Legislature to remove an 1891 ban on the erection of a structure higher than 125 feet that is not a church steeple. The new center will have its own plazas, restaurants, and parking facilities, and will be completed in stages. One high and one low building will be erected first in the Rogers block area, to provide 305,000 square feet of floor space, and other structures will go up later. Maximum flexibility for prospective occupants is provided in the architectural plans.

Announcement of this major change in the neighborhood of M.I.T. was made jointly by James R. Killian, Jr., '26, Chairman of the M.I.T. Corporation; Gerald W. Blakeley, Jr., President of Cabot, Cabot and Forbes; and Paul R. Corcoran, Chairman of the Cambridge Redevelopment Authority, from which the Rogers block was purchased.

Dr. Killian pointed out that, for an educational institution, collaboration such as has been undertaken with Cabot, Cabot and Forbes is perhaps unprecedented, but much may be accomplished through it. The new center will increase tax revenues, which the city of Cambridge needs, contribute to the industrial vigor of New England, and enable industry to maintain close liaison with the universities in the vicinity.

Mr. Blakeley said that his firm, which has located a majority of the new research facilities built in the Boston area, has found that a major factor in the choice of locations has been proximity to M.I.T. Until now, however, it has been necessary for companies



One of the models built by planners of the research center to be built by M.I.T. and Cabot, Cabot and Forbes in Cambridge.

desiring this association to locate as far as 18 miles from the libraries, laboratories, and other resources of the Institute. And Mr. Corcoran declared that Cambridge owes M.I.T. a debt of gratitude.

"It is heartening to note," Mr. Corcoran added, "that in this undertaking the new corporation will

pay taxes and is joining its neighbors in the joys and sorrows of day-to-day living in its home city. This public demonstration of co-operation and competence, together with the physical improvement and tax support which accompany the proposed development, is of the highest value."

M.I.T. will not occupy any of the buildings in this center, but has construction plans of its own well advanced which will affect the skyline, too. Cambridge land is so valuable and limited, President Julius A. Stratton, '23, recently pointed out, that the Institute must consider erecting higher buildings rather than expanding horizontally. In the near future, the Institute expects to erect a home for its Center for Earth Sciences, a parking garage for 400 cars, and a dining hall for Burton House. Longer-range plans call for several more major construction projects.

Although tax exempt, M.I.T. has arranged to make payments to Cambridge in lieu of taxes for a period of years when it has purchased property in the City. In the last 10 years, nearly \$2,000,000 has been paid to Cambridge in this way, and corporations occupying M.I.T. land have paid more than \$1,500,000.



## Auroral Radar Research

THE AURORA BOREALIS and the aurora australis are manifestations of electrical disturbances in the upper atmosphere, at altitudes of 100 to 1000 kilometers. The natural aurora is most pronounced in regions around the magnetic poles, as the lines of force in the earth's magnetic field bend down through the ionosphere. Generally supposed to be caused by clouds of charged particles emitted from the sun and trapped by the earth's magnetic field, the true cause of the aurora has yet to be definitely established and is currently a matter of great interest to many scientists.

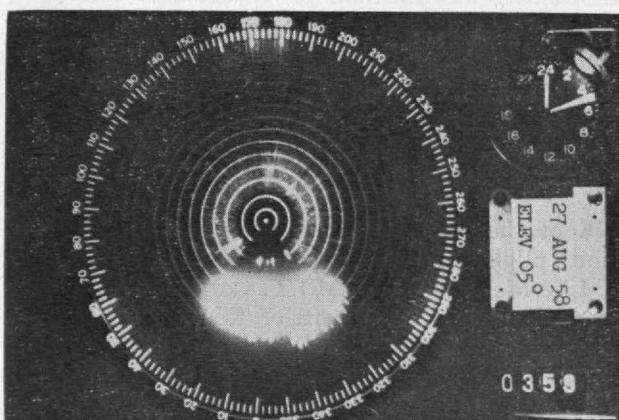
Auroral phenomena can cause a virtual blackout of all normal radio communications over wide areas of the globe. Severe absorption, scattering, and Faraday rotation of radio waves are observed during periods of intense auroral activity, at all frequencies up to about 100 megacycles per second, and effects are measurable, though less severe, up to about 1000 megacycles.

Modern radar techniques provide a powerful tool for studying the aurora, by day as well as by night, and a broad program of auroral radar research has been under way for several years at Lincoln Laboratory, using facilities at Millstone Hill, Round Hill, and points as remote as College, Alaska, and sometimes even using the moon as a calibrated reflector. Since radar can provide statistical data on the motion of individual particles in the auroral clouds, this research may help to identify the specific type of particles and shed light on their origin.

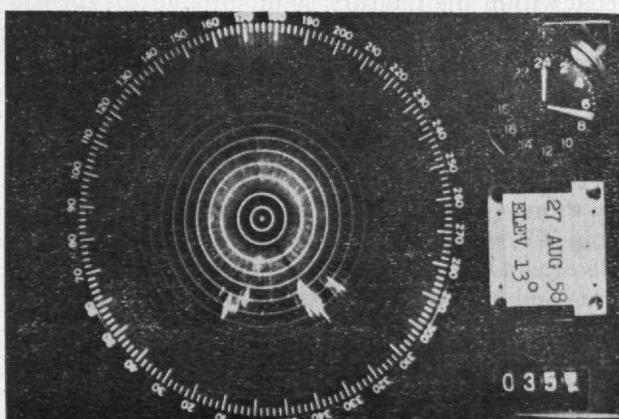


Photo by Gjon Mili, '27

CHARLES S. DRAPER, '26, "father of inertial guidance," received the William Procter Prize for Scientific Achievement at this winter's meeting of the American Association for the Advancement of Science. Edward R. Weidlein, chairman of the Scientific Research Society of America, presented the \$1,000 prize to the M.I.T. professor.



Plan Position Indicator scope photos of auroral echoes.



## The Structure of Collagen

A THIRD of the protein in the human body is collagen, and this fibrous connective tissue varies but slightly throughout the animal kingdom. Men have used collagen from animals for many years, in glue, to give gloss to paper, and for other purposes. But chemists have not synthesized it yet, and collagen diseases such as arthritis and rheumatic fever remain to be conquered.

Until recently, in fact, the structure of collagen was poorly understood. A third of collagen is glycine, the simplest amino acid, but the geometrical arrangement of this and other acids which gave collagen its valuable properties was baffling. Finally, by studying the diffraction of x-rays directed at specimens of collagen — including the tendon from a rat's tail — a model of the collagen molecule was worked out that now is generally accepted.

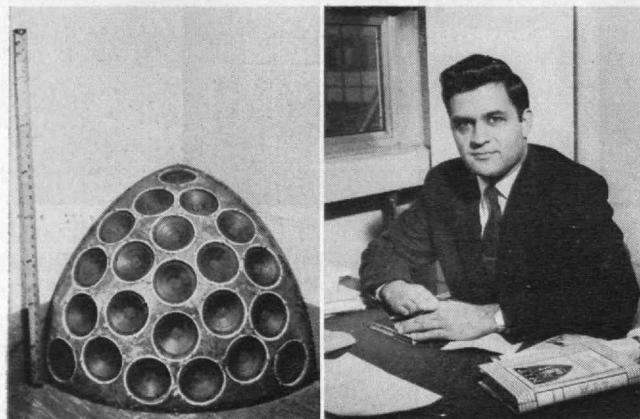
Alexander Rich, Associate Professor of Biophysics at M.I.T., described this model at the recent meeting of the American Association for the Advancement of Science. Collagen, he said, resembles a rope made by coiling three strands together. Each strand is a coiled polypeptide chain of amino acids. Together the chains can support greater loads than they could separately.

## The Tweeters That Woof

WHERE should the speaker be? Nearly every enthusiast about high-fidelity music has pondered this question, but few have gone into it as deeply as Amar G. Bose, '51, Assistant Professor of Electrical Engineering — and his answer to it is now Patent No. 2,915,588. A model of it now adorns one corner of his office.

Dr. Bose found listening to recordings like hearing symphony concerts through a hole in a wall. In an auditorium, he knew, much of what you hear is reflected to your ears. So it occurred to him that it would be nice to have his hi-fi music reflected as it might be if it were emitted from a ball suspended from the ceiling in the center of the room — and also to have the high and low notes both come from the same speaker. The familiar, impressive obstacles to such an arrangement fascinated rather than fazed Dr. Bose. He grappled with them for many a night and, at last, with the help of Charles Hieken, '51, and others, he found a way to circumvent them.

His invention is an eighth of a sphere containing 22 speakers. When put on the floor in the corner of the room this fraction of a ball extends 22 inches along



The 22 speakers put together by Amar G. Bose, '51.

each wall. The floor and the two walls serve as mirrors, and the music pours out in all directions as though it came from a sphere.

The 22 speakers are the little kind that ordinarily are used for tweeting, but these speakers also woof. A single small speaker cannot radiate low tones as well as high tones, but a group of them placed close together can do so and still reproduce high tones nicely. What matters, Dr. Bose explains, is not the diameter of a speaker but the volume of air that is moved. Behind his little speakers there is an electronic compensating network which supplies the correct balance of tones to the whole unit. For tweeting, his speakers function as separate units; for woofing, the whole surface of the eighth of a sphere vibrates.

Having run a radio repair business in Hollywood, Pa., while in high school, Dr. Bose was familiar with price lists, and the components he used for his invention are not expensive. At M.I.T. he has worked with Norbert Wiener on statistical communication theory, and much of the mathematical analysis which preceded the design of his new speaker was done in 1956 while he was lecturing on nonlinear matters at the Indian

Statistical Institute in Calcutta and the National Physical Laboratory in New Delhi. He is highly pleased with the music from his eighth of a sphere, but is still puzzled by certain aspects of men's appreciation of acoustical actualities, and has more projects in mind that will keep him up nights for years to come.

## The Computer's Status in Russia

A DELEGATION to study data-processing developments in Russia last year, sponsored by the National Joint Computer Committee, included two M.I.T. Alumni, Willis H. Ware, '42, of The Rand Corporation, and Samuel N. Alexander, '35, of the National Bureau of Standards.

Highlights of a report given by Dr. Ware in December at an Eastern Joint Computer Conference dinner in Boston included:

In *computer mathematics*, the Russians "are at least equal to us, and may well be ahead of us."

In *equipment*, they lack the variety and quantity available here. "We estimated that at most 300 computers are now operating in Russia, compared to several thousand in the United States."

In *miniaturization*, the United States leads, but the Russians "are working very hard and are not in the dark ages of computer technology."

In *familiarity with the literature*, "any one of them could put any one of us to shame."

Dr. Ware found their knowledge of work in this country and elsewhere astonishing. "They get three journals from Mozambique," he remarked, "and I didn't even know a technical journal was published in that country."

In conclusion, he quoted General James H. Doolittle, '24: "The Russians aren't 10-feet tall, but they aren't four-feet tall, either; they are just about six-feet tall."

## The Trouble With Television

ONE of the most respected commentators on television's plight this winter was Thomas D'Arcy Brophy, '16, Life Member of the M.I.T. Corporation and former Chairman of the Board of Kenyon & Eckhardt, Inc. Mr. Brophy noted that a situation resembling anarchy has developed in television, and warned his audience at an Advertising Federation of America meeting in New York that government control — which nobody wants — will result if the abuses are not corrected within the industry.

Print media, he reminded advertising men, generally recognize an obligation to the public, whereas: "In television, in too many instances, it's every man for himself, regardless of the public interest and of basic values; regardless of the fact that broadcasting operates on public property, that the franchise is a temporary thing — and regardless of the threat, always present in TV, of government control. . .

"So the advertising industry," he argued, "must advocate and help the networks to do what it's necessary for them to do — recapture complete editorial control of the medium and exercise the same control over advertising that presently exists in other media. . . It's that, or else, in television."



**PRESIDENT-ELECT** of the American Chemical Society now is Arthur C. Cope, Professor of Organic Chemistry and Head of the Chemistry Department at M.I.T. since 1945. Born in Indiana and educated at Butler University, the University of Wisconsin and Harvard, Professor Cope taught at Bryn Mawr and Columbia University before coming to the Institute. He is noted for his work on medium-sized ring compounds and in organic synthesis.

### A New View of Stickiness

THE STRENGTH of adhesive joints has long been ascribed to molecular attraction between the adherents and the adhesives. Polyethylene (the transparent plastic around your groceries) and other new materials do not stick together well, and industrial chemists have blamed their perversity in this respect on the weak fields surrounding molecules of these materials.

Jacob J. Bikerman, supervisor of the adhesives laboratory in the Department of Civil and Sanitary Engineering since 1956, has wondered, however, about the molecules' guilt. His theory has been that chemical impurities and low-weight molecules might form a thin "boundary layer" between some of these materials and thus prevent them from adhering properly. Now, by chemically removing impurities, he has succeeded in making polyethylene cling tenaciously to various metals, glass, and plastics, and thus substantiated this theory.

The process used in his laboratory involves fractional precipitation. The material is boiled in solvents such as cyclohexane or toluene and precipitated in



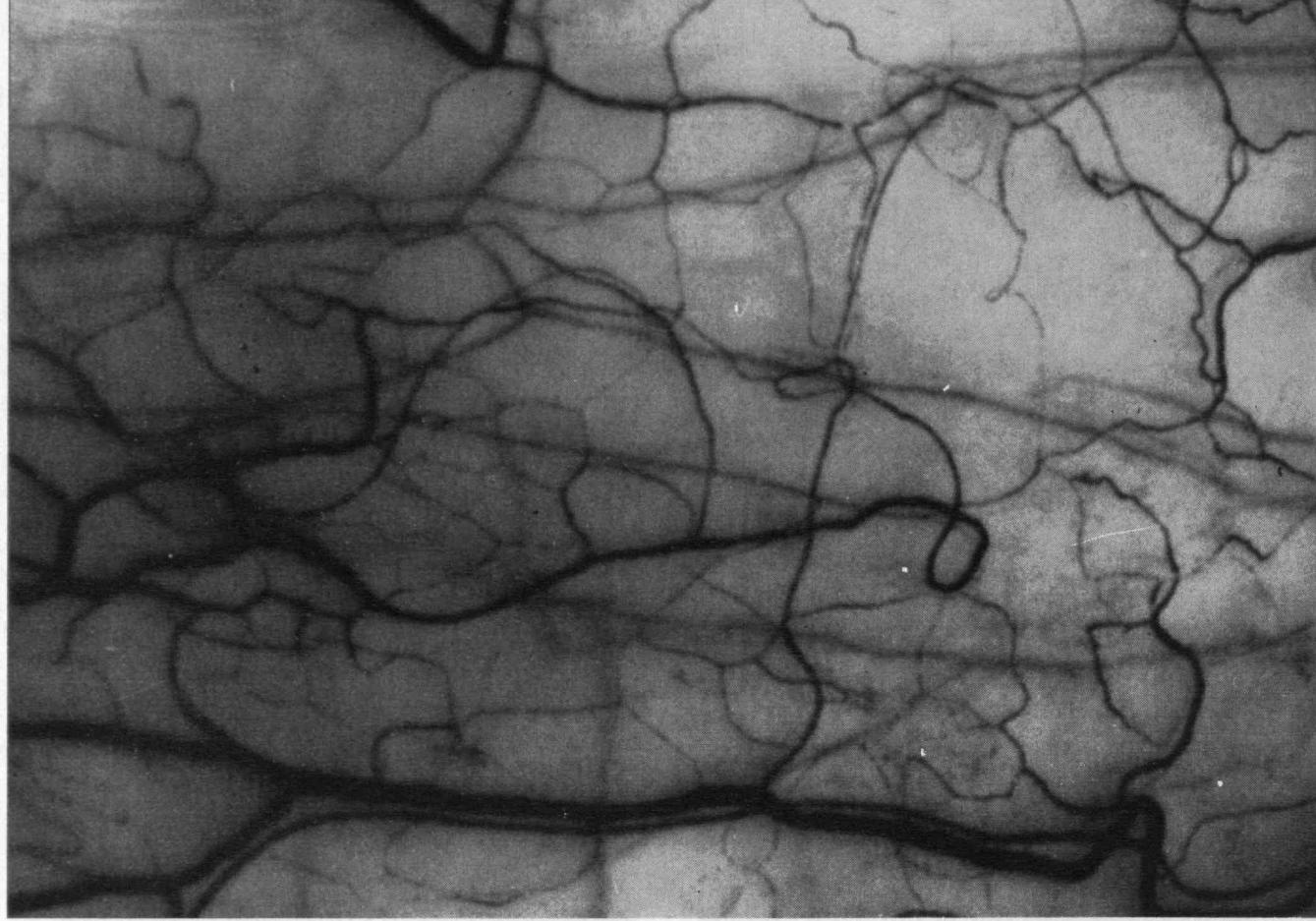
**PRESIDENT** of the American Physical Society this year is Victor F. Weisskopf, Professor of Physics at M.I.T. since 1946. Born in Vienna and educated in Göttingen, Copenhagen, and Zurich before coming to the United States in 1937, Professor Weisskopf came to the Institute from the Manhattan Project at Los Alamos. He has contributed many articles to scientific journals on nuclear physics, quantum theory, and other advances in understanding matter.

acetone. When thus treated, polyethylene can be used as an adhesive between steel and steel, steel and glass, glass and glass, glass and aluminum, or other combinations.

Mr. Bikerman believes significant improvements can be made in the adhesional qualities of many different types of materials, and a \$23,600 grant to M.I.T. from the National Science Foundation will be used in his laboratory for additional basic research on factors determining the strength of adhesive joints.

Born in Odessa in 1898, Mr. Bikerman was graduated from the University of St. Petersburg in 1921. He then worked in Germany for 14 years as a research associate at the Kaiser Wilhelm Institute of Physical Chemistry, and assistant editor of a series of publications on organic chemistry. In England, from 1936 to 1939, he conducted research at the Universities of Manchester and Cambridge. He then worked as a chemist and adhesives researcher for several industries in Great Britain and came to the United States, in 1945, as a senior chemist for Merck and Company. He was also a senior chemist for Yardney Laboratories in New York before coming to M.I.T.

*Photos by Gjon Mili, '27*



**THE PHOTOGRAPHIC TECHNIQUES** of Harold E. Edgerton, '27, Professor of Electrical Measurements, which have made the ocean's floor and a bullet's flight visible, are being used now in research regarding human blindness. The striking picture above shows the small arteries and veins in the white of a normal human eye. Professor Edgerton took

### Whispers in the Wind

**MICROPHONES** as small as the letters of type on this page have been built at M.I.T. to study the roars of jet aircraft and rockets. Flow instabilities figure in those awful roars, and also in many other annoyances ranging from heart murmurs to cyclones.

Erik L. Mollö-Christensen, '48, Associate Professor of Aeronautics and Astronautics, and his associates will use these tiny microphones, very fine "hot" wires, and other scientific tools to pick flow problems apart. They are assembling apparatus now which will enable them to add known sounds to streams of air. These streams will be at known temperatures and pressures, and the researchers hope to find out what becomes of the added sounds. Thus more may be learned about how a jet carries and scatters its own noise.

Although a central part of the experimental set-up is a pipe a foot in diameter and eight feet long, full of material to reduce the turbulence of the air sent through it, much of the instrumentation is extremely small and delicate. The "hot" wires, for example, are so fine that they cannot

this and other pictures this winter for Dr. J. W. Farqhar of the University of Edinburgh and Dr. Searle Rees of the Harvard Medical School. They are studying the micro-circulation of diabetics, and hope to correlate biochemical changes with abnormalities in the circulation. The resolution obtained permits small particles in the tiny veins to be seen.

be seen unless you hold them "just so" in the light.

The National Aeronautics and Space Administration granted \$70,000 to M.I.T. last fall to support this research regarding unstable shear flow for two years. Victor Eckhaus, research associate, John R. Martucelli, '53, engineer, and two graduate students — Marc A. Kolpin and James G. Poor — are participating with Dr. Mollö-Christensen in this rather quiet attack on terrific sounds.

### Interns in Public Service

**TO INTEREST** capable young people in careers in state government, a senior internship program in public administration has been announced by Massachusetts Commissioner of Administration Charles Francis Mahoney. It is the first program of this kind in the nation, and the Carnegie Corporation has approved a grant to support this three-year, \$145,000 program.

Five interns will work in the commissioner's office as public administration specialists, for each of the next three years, then devote a year to graduate studies at a co-operating institution. The latter are M.I.T., Harvard University, Boston University, and the University of Massachusetts.

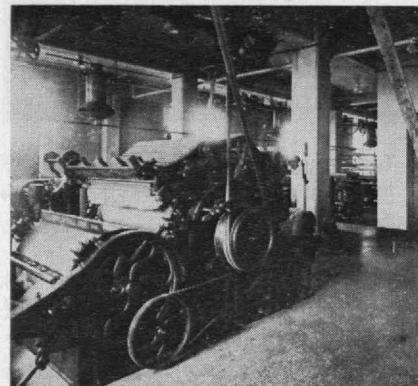
The Office of the Commissioner of Administration is the fiscal and co-ordinating center of all state agency activities in the Commonwealth of Massachusetts.

(THE TREND OF AFFAIRS is continued on page 46)

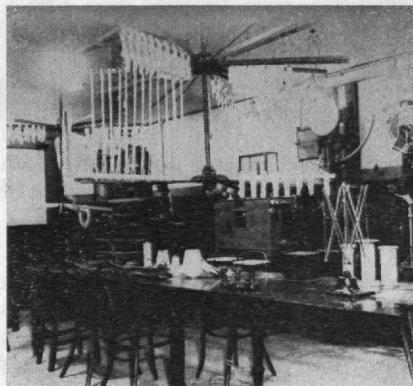
# Staying Ahead In Textiles

*The Institute's program has advanced from the design of machines and testing to basic research . . . craftsmanship is vanishing and horizontal integration is coming*

BY EDWARD R. SCHWARZ



The cotton process laboratory in 1918.



The textile testing laboratory in 1928.

THE JOURNEY back in time from attempts to snare a rocket nose-cone package in airborne nets to our cave-man ancestors' use of nets to snare fish is a long one. It spans the development of textiles on earth — world-wide — and points up their place in one of the trilogy of human essentials: food, shelter, and clothing. Textiles even permeate, to a degree, the first two. On occasion, a man vows to eat his hat. On occasion, too, men live in tents.

Felts, spun yarns, and woven and braided fabrics were produced for untold centuries before the Christian era. Graves, in Egypt and in Peru, yield textile treasures from almost prehistoric times. The lake dwellings in Switzerland give up Stone Age implements and braided fabrics.

Mechanical, ornamental, and wearing-apparel textiles have come into being to satisfy the demands of ultimate consumers through years of research and development. Now, they yield their secrets to the mass

spectroscope, the electron microscope, the x-ray diffraction apparatus, the iso-electric strain gauge, and even the computing machine and techniques of operations analysis.

#### *Designs and Looms*

Textiles have figured in the program of instruction at M.I.T. since 1872. With support from the trustees of the Lowell Fund (originated by John Lowell in 1832) the Lowell School of Practical Design was started; and in 1878, pattern looms were added for "illustrating the practical applications of designs for woven goods." Housed in 1883 in the "new building of the Institute on Garrison Street," the installation provided two fancy chain looms for dress goods, three fancy chain looms for woolen cassimeres, one gingham loom, and one Jacquard loom. Until 1902, Charles Kastner was the first and only director, aided by one or more assistants. Then the emphasis returned to de-



Edward R. Schwarz, '21, was using playing cards to test observational powers of students when Gjon Mili, '27, took the photo above.

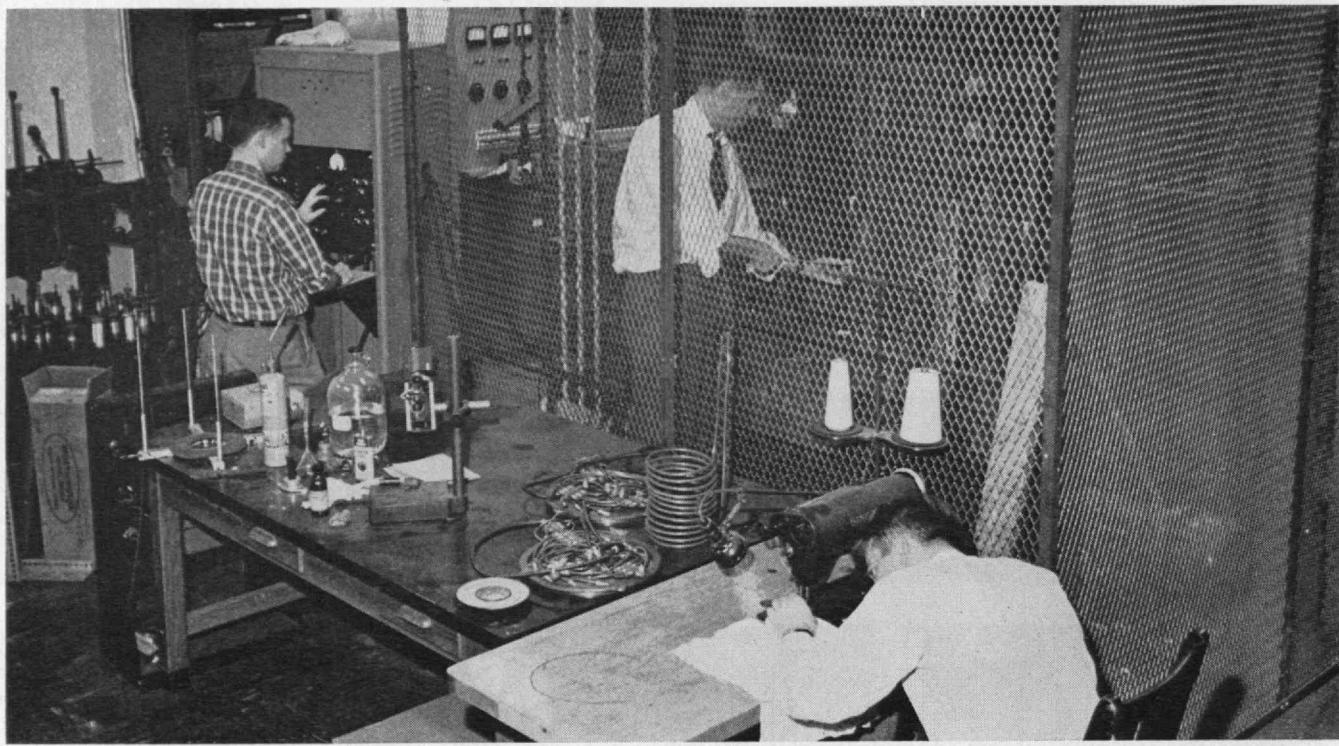
Professor Schwarz is head of the Division of Textile Technology in the Department of Mechanical Engineering at M.I.T., and reviews its history and current activities in this article.

A member of the staff since 1922, he has received high honors for contributions to textile progress.

sign, the looms were given up, and in 1903 the school was transferred to the control of the Boston Museum of Fine Arts.\*

At the height of the activity of the Lowell School of Practical Design, Professor Gaetano Lanza, Head of the Mechanical Engineering Department, asked Professor Peter Schwamb, '78, of that Department to supplement the work in design and weaving with studies in textile engineering. Professor Schwamb solicited the gift of a number of textile machines, which were used to demonstrate basic principles of textile manufacturing, and served as examples of commonly employed mechanisms in industry, thereby supplementing work in machine mechanisms and machine design.

It is interesting to note that starting with an enrollment of 16, maximum enrollment of 91 was achieved in 1882, and from 1872 to 1903, there was a total enrollment of 1,447 students, 1,347 of whom came from Massachusetts.



This is a portion of the Samuel Slater Textile Research Laboratory now. The high-capacity impact tester is caged

for safety. Student in foreground at right is studying the interaction between a machine and textile, using symbols.

The transfer of the Institute from Boston to Cambridge made it possible to provide textile technology facilities on the third floor of Building 3 where, later, Building 7 was joined to the existing group. What is now the Charles T. Main Textile Research Laboratory was equipped then with cotton machinery from card to loom (including combing) by the generosity of American machine builders. Across the corridor, in space later occupied by part of the differential analyzer installation, was a testing laboratory — one of the first in the country. It was equipped with the best testing machines then available, largely through the efforts of the late Charles T. Main, '76, and was air-conditioned, as was the manufacturing space. The textile machines were used, as before, by students taking the textile engineering option in Mechanical Engineering, and by students of machine design and mechanisms of machines.

The writer was then an instructor working with Professor George B. Haven, '94, and Professor George W. Swett, '03, and was in charge of the process equipment, and the actual operation of the testing laboratory. This laboratory was concerned with the establishment of standards

as to methods and instrumentation and carried out its work in close co-operation with Committee D-13 (Textile) of the American Society for Testing Materials.

It was one of the first laboratories to be dehumidified by a refrigeration system. This made better control of moisture possible throughout the year — particularly during the spring, summer, and fall months, when the outside humidity was frequently above normal. This was of great importance, because textile materials, for the most part, are highly hygroscopic, and are affected as to physical properties by the moisture which they contain.

#### *The Textile Laboratories Now*

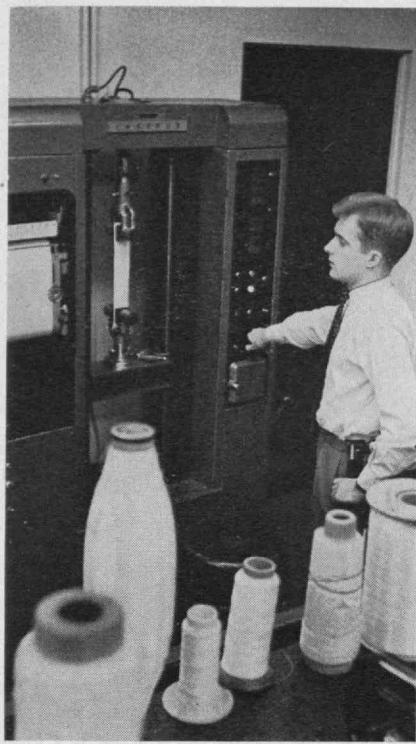
After 1930, Professor Haven devoted most of his attention to machine design, particularly at the graduate level, and the writer developed and taught the first courses in textile microscopy, textile manufacturing, fabric structure, and textile-testing laboratory work as a part of the materials testing program. These courses have been modified as necessary and kept up to date at the fourth-year elective and graduate level.

The process machinery was disposed of with the consent of the

donors in the middle 1930's and the space available with the advent of Building 7 was devoted to textile research facilities which included a new physical testing laboratory, a thesis laboratory, and microscopy laboratory. These now constitute the Charles T. Main Memorial Laboratory. Space also was provided on the fourth floor of Building 3 for an advanced research laboratory through the generosity and foresight of Commander H. Nelson Slater, '15. This was named the Samuel Slater Memorial Laboratory in honor of the founder of the cotton industry in North America (at the Slater Mill, Pawtucket, R.I.).

This laboratory pioneered in visco-elasticity, impact, and the application of electronics to textile research instrumentation. The present Instron tester was developed here initially and involved servo-control and weigh-bar activated strain gauges for load measurement. It was the first constant rate-of-deformation tester and is now standard equipment in laboratories throughout the world.

The Institute's goal has been to stay several years ahead of current practice, and from the first, the teaching program has been planned to avoid insofar as possible any



The universal textile testing machine developed in M.I.T. laboratories.

duplication of work done in other institutes, departments of colleges, or schools, dealing with textiles. The emphasis here has been on fundamental research, as a means of translating pure science into textile research and development for application by the industry and in allied fields. There has been, and continues to be, an effort to provide liaison between pure science, through fundamental research, and applied research, in addition to graduate-level teaching of engineers or scientists who have the M.I.T. bachelor's degree or its equivalent.

The basic effort has been to follow the molecular constitution of the fibrous raw materials of the industry through the numerous intermediate products, such as yarn, cord, thread, and fabric to optimum end use.

These end uses are important to the public in clothing, ornamental fabrics, and mechanical goods; to the armed forces in ground, sea, and air applications, and now in nose-cone recovery, space suits, drag parachutes for supersonic aircraft, and cargo and personnel parachutes; and to industry in conveyors, tires, tarpaulins, oil containers, and hundreds of other things. Even in the medical field, interest is keen

in use of textile research techniques to study the behavior of muscle and nerve fibers and the structure and growth of various tissues during the healing of wounds or surgical incisions. Perhaps we shall some day be able to make fibers which will react to chemical or thermal stimuli, or to electrical impulses, in such a way as to change the properties and usefulness of clothing and other requirements.

#### Horizontal Integration

When we study the manufacturing of textiles, we are concerned with basic actions which, in combinations, form the important interactions between processing equipment of whatever kind (mechanical, aerodynamic, electrical, fluid, or thermal) and fibers. It is important to find out which interactions are essential, and then, having initially divorced our minds from consideration of existing mechanisms, to go forward boldly into unexplored realms.

There has been a definite trend toward vertical integration in the textile industry. Many mills buy fiber, convert fiber into yarn, and yarn into fabric; then finish the fabric and in certain instances even control the conversion of the fabric into clothing and supervise the sale of the garments. Horizontal integration has been slower in coming, and fiber boundaries have been cut across only recently.

The modern tendency is toward the "textile" mill, rather than the "cotton" mill, "worsted" mill, "woolen" mill, or "rayon" mill, and this approach has been fostered in the textile curriculum at M.I.T. Every effort has been made for many years to give the student an ample background in the elements and principles of *textile* manufacture, regardless of the particular fiber or combination of fibers with which he was concerned.

#### Symbols of Operations

The emphasis throughout has been upon operations rather than processes. These operations include grading, sorting, mixing, blending, cleaning, attenuating, evening, combing, twisting, and winding, together with conversion to the proper final form for further treatment. Certain of these basic operations may be combined to form

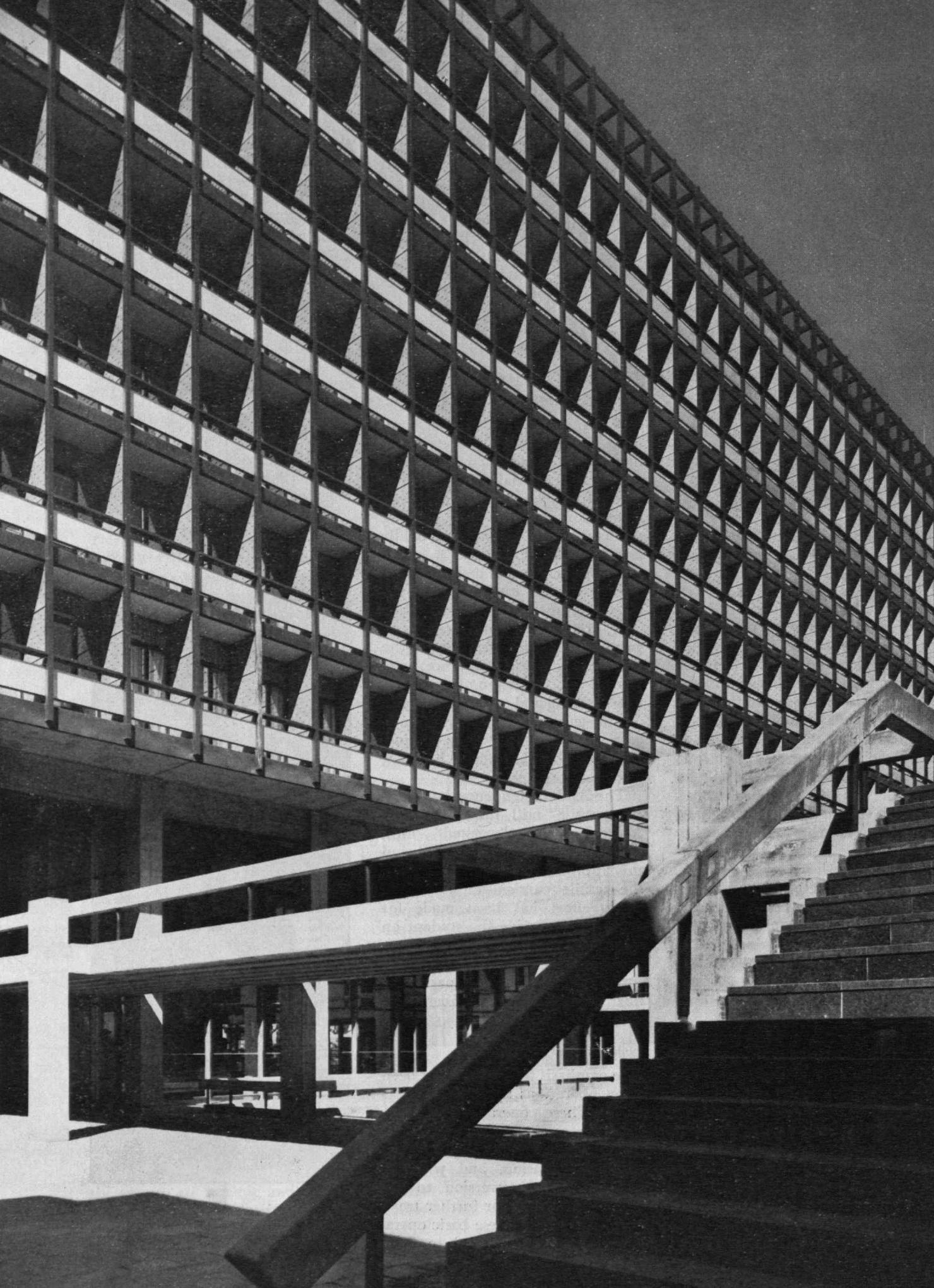
sub-processes such as carding, roving, or spinning. In turn, each operation is made up of basic actions. There are relatively few of these and each is represented by a symbol something like the therbligs of motion study, devised by Gilbreth. They include *nip*, *pull*, *restrain*, *press*, *strike against*, *struck by*, *place*, *deposit*, *control*, *measure*, *tumble*, *add*, *remove*, *transfer*, *twist*, *shear*, *nap*, *cut*, *stop*, *rotate*, etc. In simple combination, they indicate *condense*, *draft*, *tension*, *detach*, *piece-up*, *intermittent feed*, and many others. These are known as multiple or compound actions, and in more complex form are operations or sub-processes.

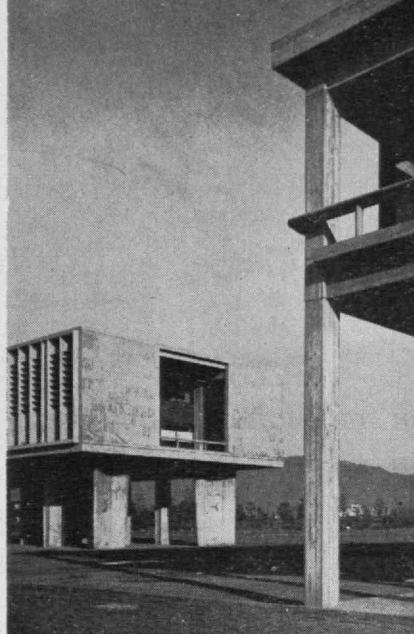
For the analysis and synthesis of operations, sub-processes, and processes, the symbolism makes possible a rapid, compact, easily understood presentation of what happens to the fiber or yarn. How things happen is

(Continued on page 40)

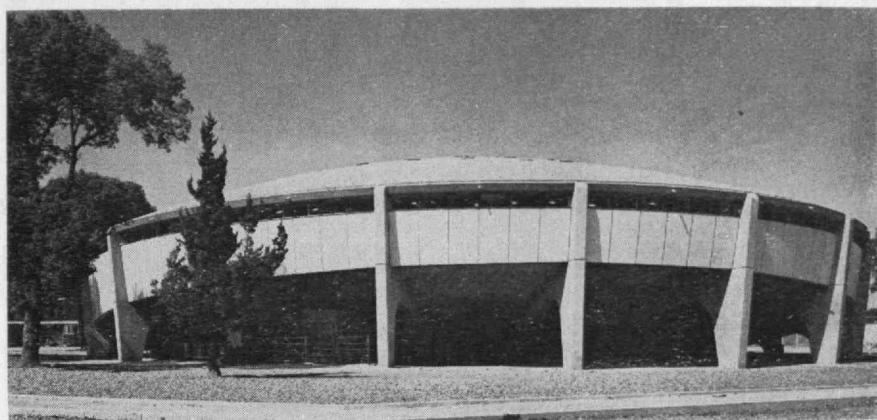


Micrographic records of fibers are studied now in the Institute's Charles T. Main Research Laboratory.

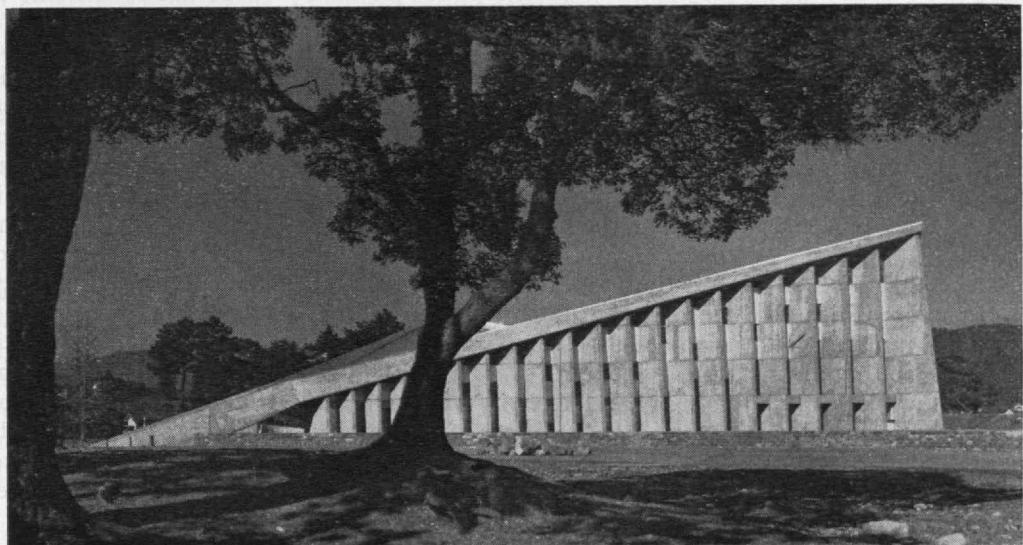




Hiroshima Peace Hall



Ehime Convention Hall



Shizuoka Convention Hall

## Japanese Architecture

FIFTH-YEAR students of architecture at M.I.T. this year have enjoyed the guidance of Kenzo Tange, one of Japan's outstanding architects. Professor Tange was educated at Tokyo University, and won the national competition 10 years ago to build the Hiroshima Peace Center. Last year his Tokyo City Hall received the first International Grand Prix awarded by France's *Architecture d'Aujourd'hui*.

Professor Tange, *Time Magazine* recently reported, "stands today at the crossroads where Japanese tradition and contemporary architecture meet." He has probed deeply into Japan's architectural past, but now is concerned lest too many traces of the past remain in his work. "Tradition," he says, "must be like a catalyst that disappears once its task is done."

Tokyo City Hall

# The Duty Of the Intellectual

*The scholar is the custodian of a tradition of honesty and sincerity essential to the honor of our country and our age*

BY NORBERT WIENER

**I**N THIS moment of crisis the *Technology Review* has asked me to write a few words concerning the moral issues which have been brought to public attention in the recent television quiz scandals. I am glad to accept this assignment inasmuch as it is a matter on which I have strong views and personal feelings.

I shall take as the theme of my sermon certain remarks which I made in a recent number of *Esquire*. They asked me, together with a number of intellectuals from Cambridge, Mass., what one thing worried me most about America today. I said and the precise words are important:

"The lack of respect for intellectual work and intellectual integrity."

I want to emphasize that I did not say the lack of prestige of intellectuals although various people who have commented on the article have taken my comment in this sense.

I am not interested primarily in increased financial rewards for intellectual work nor even that the names and faces of intellectuals be presented more to the public. I am very strongly interested that the function of the intellectual be better understood by the public as well as his motivation and his responsibility. In my opinion it is the lack of this awareness of motivation and responsibility which is the largest factor in that other crisis on which President Eisenhower has recently commented, and which plays a large role in the somewhat

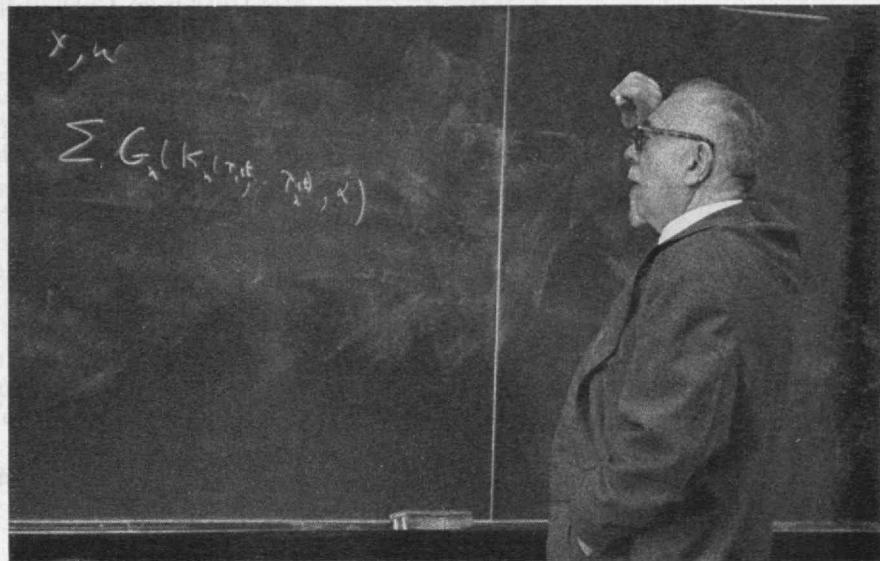
unfortunate position under which a great sector of our scientific work and the development of our scientific personnel now occupies — both absolutely and in comparison with some work done elsewhere. My main point is that the intellectual — and I include in the class the scientist, the man of letters, and the man of arts — has a very specific function to fulfill which goes far beyond the other important functions of the citizen at large. He is the custodian of a tradition of honesty and sincerity on which the future and the honor of his country and his age depend.

In assuming this function he has accepted very considerable rewards and advantages which are quite independent of his rate of pay and even of his individual good living and personal qualities. These rewards are the privilege of participating in a grand and growing undertaking of all humanity. He has a position in which he is not so immediately pressed by other responsibilities that he is unable to sit back a little and take a larger view of the world about him that pulls to the general mores of the time. Thus he is to some extent free to enjoy a good life and the companionship of those motivated by the same purposes and congenial to him and to his way of thinking. In order to merit these privileges he must accept a responsibility for the priesthood of truth and intellectual honor going well beyond what belongs to the citizen at large.

It is a commonplace that every profession, every function in life,

involves its own peculiar responsibilities. The civilian will not be greatly censured if he runs away from a stricken battlefield. The soldier has accepted a very special responsibility for physical bravery and moral bravery as well, and above all the officer in charge of troops. I do not think that any honest man looks forward with any pleasure at the prospect not merely of dying in action but of having to face a situation in which the only honorable thing for him to do is to die in action. Nevertheless, in becoming a soldier, and especially in becoming an officer, he must accept the contemplation of this possibility.

You or I, not being doctors or nurses, could leave a plague-stricken city without reproach. The doctor or nurse must remain until the last moment at which his or her services have any possibility of usefulness. Whatever our legal duties are, nobody would make too much of it against us if we refused to aid in the capture of a dangerous and armed criminal. The risk of being killed in such an encounter is implicit and accepted, however, by every policeman no matter how honorable or important his status. Similarly, the fireman knowingly and willingly assumes the risk of being crushed or burned to death in the flames of a falling building. These responsibilities are of the same order as that of the early Christian in accepting death in the arena rather than undergoing the disgrace and humility of burning a pinch of incense before the gods.



The scholar and the teacher have a function to perform which is absolutely essential for the continuance of the development of our society and even for its prolonged existence. The scholar is the custodian of the intellectual development of this society, of the understanding of truths already known, and of the development of new truths and concepts. The teacher in his turn is the guardian of the task of passing down these new truths and discoveries, as well as the truths and discoveries already known, to a new generation.

The prosperity and the very existence of humanity depend on their integrity and on their conscientious devotion to truth. In accepting these responsibilities, and in accepting the rewards of their position — and these rewards, although perhaps limited from a monetary point of view, are very great and create a mode of life which is very well worth living — they accept certain duties which belong with these rewards. These duties involve a very special relation to the truth. They must not pay in false coin and lie to the public at large, and even beyond this, they must not lie to themselves. Yet, even this passive honesty is not enough. They must exert themselves at all costs to discover truths where none has been observed before, and they will not live up to this duty if they do not devote to it every effort of which they are capable.

This is a very severe responsibility. It cannot be satisfied by merely

selecting for their studies those regions in which exploration is easy, nor can they protect their records of success by refusing to entertain tentative ideas which on further investigation prove to be erroneous. Indeed, the man who has never gone beyond his obvious capabilities and has an unbroken record of intellectual successes, without some failures to set against them, has in all probability not worked to the limit of his powers and is to be blamed rather than praised, for preferring security to the discharge of his intellectual function.

If even this limited failure in his responsibility is to be reproved, how much more are we to blame the scholar who for money or other bribes tells deliberate lies and still holds himself out to be a scholar or a teacher? Worst of all, what are we to say of the man who does this and yet speaks sententiously in the name of education or scholarship? If his other activity brings him into a situation inconsistent with his teaching and scholarly duties, or if the standing code of his other activities involves permissions or duties which are inconsistent therewith, let him cast his other activities or scholarship aside. One cannot serve both God and Mammon, and the honest servant of Mammon who has turned his back on the worship of God is far to be preferred to the hypocrite who wishes to combine the rewards for lying and the credit which goes with the priesthood of truth.

Yet even without an explicit lie, the combination of pseudoscholar-

ship and showmanship which goes into our quiz programs and similar forms of commercialized scholarship is bad in itself. The type of purely attentive learning which has a market in quiz programs has nothing to do either with the creative learning of the scholar or the evocative learning of the teacher. It is perhaps true that the great public does not understand this difference and confounds the one with the other. This is a dangerous weakness on the part of the public, and pandering to it is a dangerous vice on the part of the showman-scholar.

It is for all these reasons that the tampering with the truth on the part of the man normally devoted to it is a dereliction of duty quite comparable with the dereliction of an officer who runs away from his own soldiers in the face of the enemy, or who sells the enemy the plans of fortification. Because the code of the soldier visits his dereliction with dire penalties, whereas the false scholar can walk the streets without fear of danger to his life or liberty, his betrayal is if anything the worse act of the two. At the very least, he should meet with the contempt and ignominy which are the part of the cashiered officer.

Apparently, there is a large element of our public which is not prepared to recognize this and which will excuse the treason of the false scholar by saying "he has committed no crime." Frankly, I doubt if Judas Iscariot committed any crime against the laws of the kingdom of Heaven.

# Institute Yesteryears

## 25 Years Ago . . .

IN FEBRUARY, 1935, through the thoughtfulness of the widow of Frederic F. Bullard, '87, composer of the music of the Institute's *Stein Song*, The Review's editors fell heir to some historical notes which disclosed that "the song was not written originally for any particular school or college, but was inspired by the reading of what Mr. Bullard considered an inadequate musical setting for the words written by Richard Hovey, of Dartmouth.

"The new music was written during the three weeks preceding March 4, 1898. . . . It was twice submitted to the Boston Music Company and refused by them, Mr. Schirmer assuring Mr. Bullard that it was no good and could never succeed. . . .

"As the story goes, Arthur Wellington (basso) first sang the song as a solo in public and had the first autographed copy. Finally, Ditson and Company accepted it on first sight and there is a record of sending a copy to Richard Hovey on April 16, 1898, so evidently no time was lost in publishing it."

¶ A census taken by Registrar J. C. MacKinnon, '13, disclosed that the student body included representatives of 31 nations outside the United States, its territories, and dependencies. A total of 122 young men and women, or nearly 5 per cent of the Institute's registration held foreign citizenship. Leading in numbers was China with 28; Canada was second with 24; Great Britain third with 13; Cuba and Japan tied for fourth with seven each.

¶ A "whisker census," taken by The Review editors, revealed that only 3 per cent of the 1934-1935 Faculty members were bearded, and that 22 per cent displayed mustaches, leaving 75 per cent "wholly unadorned" — whereas the corresponding figures 25 years earlier, in 1909-1910, had been 24, 46, and 30 per cent.\*

## 50 Years Ago . . .

IN AN ANALYSIS of the 1,479 students at the Institute during 1909-1910, Registrar Walter Humphreys, '97, found that an even 1,400 were from the continental United States or its territories, and 79 were from foreign countries.

Of the former, 852 (58 per cent) were from Massachusetts and 99 (8 per cent) from New York, the remainder including at least one representative of all but five states, *viz.*, North Carolina, Idaho, Nevada, Oklahoma, and Oregon.

Of the 79 who came from 23 foreign countries, 20 were from Canada, 11 from China, 10 from Mexico, 7

\* In 1958-1959, of the 686 members of the Faculty and Administration, only two were bearded while 23 (4 per cent) wore mustaches, leaving 661 (96 per cent) "wholly unadorned."

from Cuba, 4 from the Argentine, and 4 from Japan.

Of the total registration, 1,096 were classified according to the Institute Course they were pursuing, those not so classified being freshmen and a few "specials." The largest Course was Civil Engineering with 207, followed in order by: Mechanical Engineering, 204; Electrical Engineering, 203; Architecture, 109; Mining Engineering, 99; Chemical Engineering, 84; Sanitary Engineering, 60; Chemistry, 44; Naval Architecture, 41; Biology, 22; Electrochemistry, 14; General Science, 4; Physics, 4; and Geology, 1.

¶ During the mid-year vacation of 1909-1910, 39 undergraduates composing the M.I.T. Glee, Mandolin, and Banjo Clubs went "on tour" to give successful concerts before alumni audiences at Buffalo, Detroit, Chicago, Rochester, and New York.

## 75 Years Ago . . .

"A FORTNIGHT AGO," recalled the editor of *The Tech* in that journal's issue of February 4, 1885, "the students of the Institute were unanimously engaged in a pursuit which may be loosely defined as a spasmodic attempt to make up for lost time. This time may have been lost through negligence, natural incapacity, or excessive study; of which the first, whether culpable or not, is simple in its effects; the second no less so, since it prevents its victim from employing his time to the best advantage; the third operates on the principle of 'the limit of production' in agricultural economy; that is, beyond a certain point additional time spent in intellectual effort will not produce adequate returns. . . .

"Our second term's greeting is, did you pass the semi-annuals? Yes? Accept our congratulations, then — or, if you failed, our commiseration. The examinations are over; we have recuperated our energies by a recess from our labors, and here we are back again to begin a new term's work, with great expectations. . . .

"What more touching sight is there than to see a couple of Freshmen shaking each other's hand like pump-handles, so happy to meet again after the long separation of seven days?"

¶ And in an adjoining news column, *The Tech* recorded: "It is rumored that the Miners and Chemists of '86 are to petition the Faculty to have the laboratory open on Sundays from 6 A.M. to 9:30 P.M., with the exception of an hour for prayers at 11 o'clock. In this way they expect to satisfy the authorities, and at the same time improve on the old method of climbing in on the fire-escape."

## 95 Years Ago . . .

ON MONDAY, February 20, 1865, President William Barton Rogers made the following entry in his diary: "Organized the School! Fifteen students entered. May this not prove a memorable day!"

THE INSTITUTE'S GROWTH can be traced in the columns of figures on the next page, covering registration, the instructing staff, and degrees awarded. Also listed are leading states and countries from which students have come.

	One Year Ago 1958-1959		25 Years Ago 1934-1935		50 Years Ago 1909-1910		75 Years Ago 1884-1885	
	No.	%	No.	%	No.	%	No.	%
<b>Total Registration</b>	<b>6,259</b>	<b>100</b>	<b>2,507</b>	<b>100</b>	<b>1,479</b>	<b>100</b>	<b>579</b>	<b>100</b>
Freshmen	941	15.0	542	21.6	376	25.4	193	33.5
Other Undergraduates	2,647	42.3	1,467	58.5	1,070	72.4	386	66.5
Total Undergraduates	3,588	57.3	2,009	80.1	1,446	97.8	579	100.0
Graduate Students	2,671	42.7	498	19.8	33	2.2		
States Represented	49		46		42		33	
Massachusetts	1,459	23.3	1,148	45.7	852	57.6	358	61.9
Other New England	318	5.1	199	7.9	115	7.7	70	12.1
Total New England	1,777	28.4	1,347	53.6	967	65.3	428	74.0
Foreign Countries Represented	74		31		24		4	
Foreign Students	766	12.2	122	4.9	79	5.3	12	2.1

<b>Total Instructing Staff</b>	<b>1,949</b>	<b>100</b>	<b>517</b>	<b>100</b>	<b>239</b>	<b>100</b>	<b>57</b>	<b>100</b>
Faculty Members	625	32.1	245	46.5	88	36.8	28	49.1
Students per Staff Member	3.2		4.8		6.2		10.2	
Students per Faculty Member	10.0		9.2		16.8		20.7	

<b>Total Degrees Awarded</b>	<b>1,782</b>	<b>100</b>	<b>755</b>	<b>100</b>	<b>273</b>	<b>100</b>	<b>28</b>	<b>100</b>
Bachelors	794	44.6	526	69.8 (A)	251	91.9	28	100 (B)
Masters	724	40.6	184	24.3	19	7.0		
Advanced Engineering	72	4.0						
Doctors	192	10.8	45	5.9 (C)	3	1.1 (D)		

a. First Bachelor in City Planning, to Frank J. Brazel, '34.  
 b. First S.B. in Electrical Engineering, to Frank A. Pickernell, '85.  
 c. First Sc.Ds. in Ceramics and Sanitary Engineering, respectively, to Earl O. Wilson, '28, and Rolf Eliassen, '32.  
 d. First Ph.D. in Geology, to Charles H. Clapp, '05; and first D.Eng. awarded by M.I.T., in Electrical Engineering, to Harold S. Osborne, '08.

Leading States Outside of New England	No.	State	No.	State	No.	State	No.	State
	997	New York	326	New York	99	New York	21	Illinois
	352	New Jersey	136	New Jersey	46	Pennsylvania	20	Ohio
	312	Pennsylvania	110	Pennsylvania	27	Ohio	16	New York
	235	Illinois	66	Illinois	25	California	16	Pennsylvania
	204	California	52	Ohio	24	Illinois	8	Maryland
	195	Ohio	33	Missouri	14	New Jersey	6	Minnesota
	125	Michigan	32	California				
	118	Florida	21	Michigan				
	108	Texas	20	Texas				

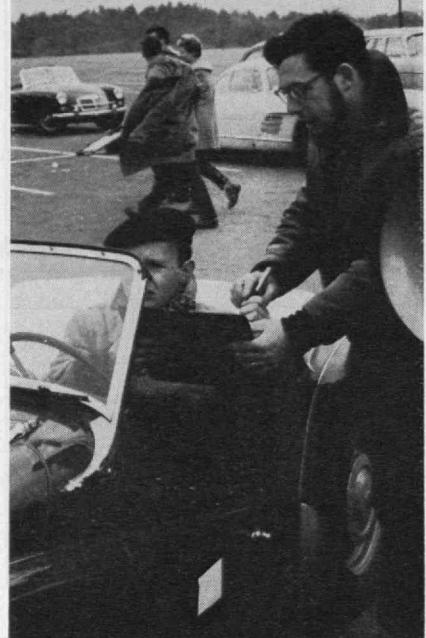
Leading Foreign Countries	No.	Country	No.	Country	No.	Country	No.	Country
	103	Canada	28	China	20	Canada	8	Canada
	55	India	24	Canada	11	China	2	Great Britain
	37	France	13	Great Britain	10	Mexico	1	Cuba
	33	Great Britain	7	Cuba	7	Cuba	1	Japan
	31	Japan	7	Japan	4	Argentina		
	31	Korea	6	India	4	Japan		
	28	Colombia						
	27	Brazil						

# Racing in a Parking Lot

FOR INTERCOLLEGIATE sport car contests, miniatures of such famous courses as those at Monaco and Sebring are set up with pylons. These photos were taken the day that the Modena racing course was being simulated in the Sylvania Waltham parking lot, for drivers from M.I.T., Harvard, Babson, Suf-

folk, Northeastern, and the University of New Hampshire.

The M.I.T. Sports Car Club, which won the championship a year ago, is only a few years old. It has 45 members, about half of whom have cars of appropriate types. They compete with other clubs once a month.

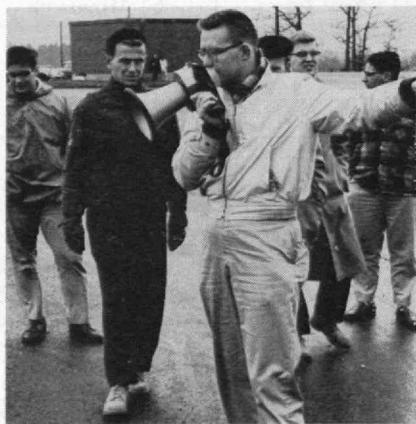


Richard Brass, '60, checked in 40 drivers for the invitational event.



Photos by Curtiss Wiler, '63

Drivers raced through course after walking and driving slowly through it. Dave Yett, '63, on far side of speeding car, was assistant timer.



Bion Francis, Jr., '60, Club President, showed course to the drivers.

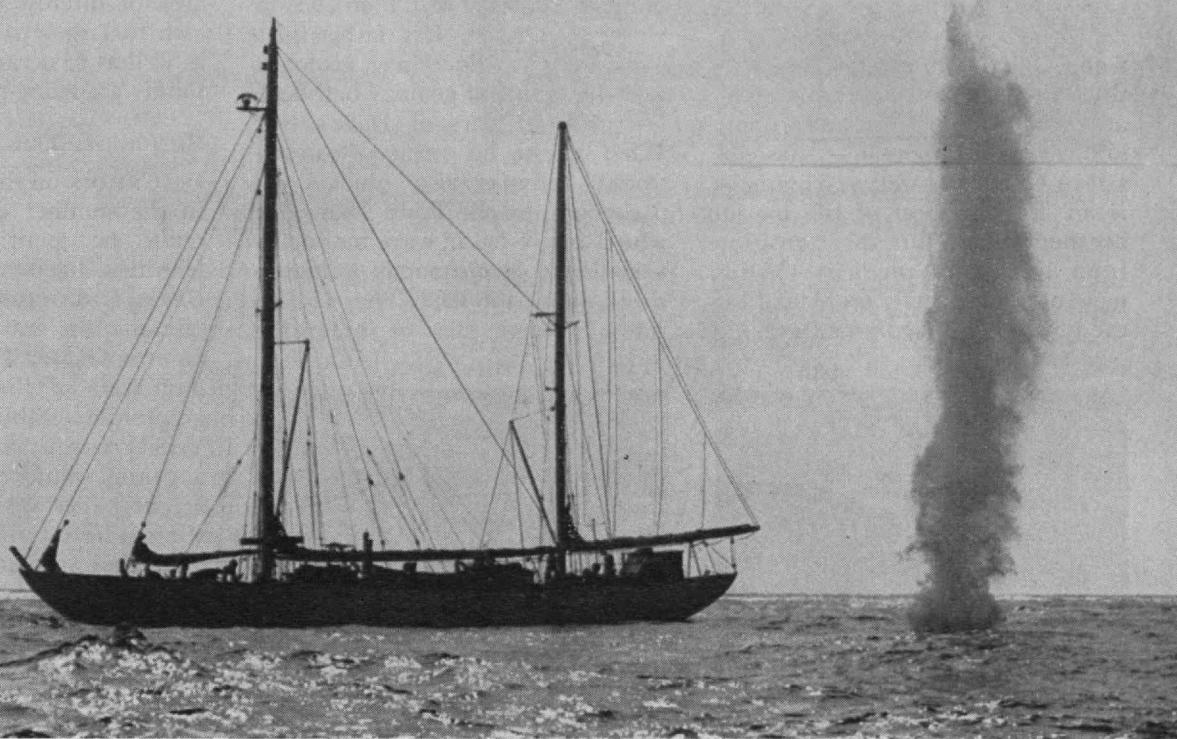


Stephen Pollock, G, was starter-timer for the "little Modena" event.



Modifications in VW driven by Stuart Lichtman, '61, interested many.

# When Your Lab Is An Ocean



BY WILLIAM T. STRUBLE

*An M.I.T. graduate student at Woods Hole puts in long days and gets more than a taste of salt on fascinating projects*

JOSEPH CONRAD asserted that *the sea never changes and its works, for all the talk of men, are wrapped in mystery*. Oceanography is a compendium of sciences devoted as vigorously as possible to the destruction of whatever enigmas the sea has to offer. Right now, it is more robust than ever.

"Oceanography is beginning to come out of the Dark Ages," says Davis A. Fahlquist, '59, a student who has elected to make the study of the oceans his career.

Buoyed by fresh and more abundant currents of funds, oceanog-

raphy is acquiring a complement of more, and more varied, scientists — attracted by new opportunities as well as by the very vastness of the oceans and the problems they present. Dave Fahlquist is one of several M.I.T. students participating in a new co-operative program of oceanographic study and research established by the Woods Hole Oceanographic Institution and M.I.T. By terms of the alliance, students and staff of the new Center for Earth Sciences may carry on research in the Woods Hole laboratories and on its five ships; and five scientists from "Oceanographic" have been appointed to the M.I.T. Faculty. They are Columbus O'D. Iselin, William V. R. Mal- kus, Henry M. Stommel, and William S. von Arx, '55, Professors of Oceanography, and J. Brackett Her-

sey, Associate Professor of Oceanography. The program was given impetus by a recent \$150,000 grant to M.I.T. from the Ford Foundation for training of research workers in atmospheric science and oceanography.

#### *24-Hour Days at Sea*

Albeit science is a coherent and unifying pursuit of man, there is nevertheless a perceptible distance, in the accouterments and tenor of life, between Woods Hole and the laboratories backed against the jostling urban masonry of Cambridge. An oceanographer often must go thousands of nautical miles to confront his experiment. An ocean, to meet the problem unequivocally, cannot be brought into a laboratory, and so the science of oceanography, like all other endeavors

*William T. Struble joined the M.I.T. Office of Public Relations last summer after a year of graduate work at Columbia University in science reporting. He is a former writer for The Associated Press.*

bound up with the sea, is filled with months of grueling work, sometimes in angry, tumultuous seas. "At sea you work around the clock," Dave observes. "You work 12 to 15 hours, then repair the equipment and try to make every hour count." With the clear memory of five months of shipboard work last summer, he adds: "You get tired."

A part of the compensation, when that consideration arises, is that "there is never a dull moment" at sea. And in any case, an intimate knowledge of the ocean — a taste of salt as voyager as well as scientist — is an integral facet of life for an oceanographer. But the transition from laboratory physicist to this new role, a seemingly problematical event, was not difficult for Dave. He

had been brought up close to water in Rhode Island. In 1950 he received a bachelor of science degree in physics from Brown, then spent three and one half years as an engineer for an industrial firm. The climate of industry was not inimical but neither was it sufficiently creative, at least at that time and place, and Dave entered M.I.T. in 1954 to study geophysics. His father is a consulting engineering geologist and the events of geology had been a tangential part of Dave's life. What might be termed "conventional" physics also touches on oceanography, he finds. "Someone who is interested in wave motion or turbulence is ultimately going to think about the sea." There is, besides, "a whole class of interesting

problems" that are related, and a compelling stimulus to think about them is the fact that water covers nearly three-quarters of the earth's surface.

A salient preoccupation of Dave and the subject of his doctoral thesis is a geophysical study of the western Mediterranean; it is an area of interest to the U.S. Navy (which largely supports his thesis) as well as to oceanographers with a purely academic point of view.

#### *His Voyages Thus Far*

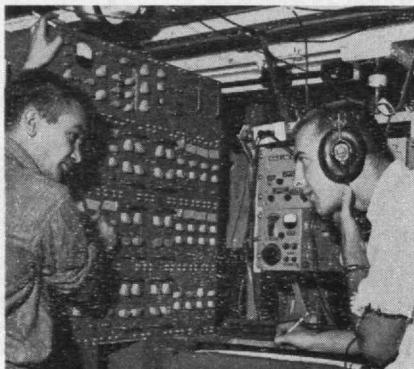
Dave's work on the Great Sea began in the summer of 1958, during a cruise he spent aboard Oceanographic's 1,800-ton research vessel, *Chain*, a converted Navy rescue and salvage ship, and aboard the *Wineretta Singer*. The latter is a 60-foot craft of the Musee Oceanographique established by Jacques Yves Cousteau; and, says Dave, with a genial salute to his Gallic colleagues, she was ballasted in red wine. The two ships made seismic refraction studies of the Mediterranean bottom.

Early in 1959 Dave went to sea again, this time as chief scientist aboard the Woods Hole ship that took part in exploration of a site for the "Mohole," the proposed geological "window" into the interior of the earth. Oceanographic's *Bear*, a 110-ton converted Army transport, was one of four vessels that made "an integrated attempt to use all geophysical tools to get a picture of the bottom underlying the area." The Mohole enterprise, proposed by the AMSOC (American Miscellaneous Society), envisions drilling to the boundary, between the earth's crust and mantle, known as the Mohorovicic discontinuity. A possible location in the Atlantic, which was investigated last spring, lies on the abyssal submarine plain some 200 miles north of Puerto Rico. With the *Bear* were ships representing the Lamont Geophysical Laboratory, of Columbia University; Hudson Laboratories, also an adjunct of Columbia; and Texas A and M. Woods Hole is now working on its share of the data, which will be integrated, of course, with that of the other groups. "We hope to be able to tell about the crustal structure and underlying sediment early this year," Dave says.

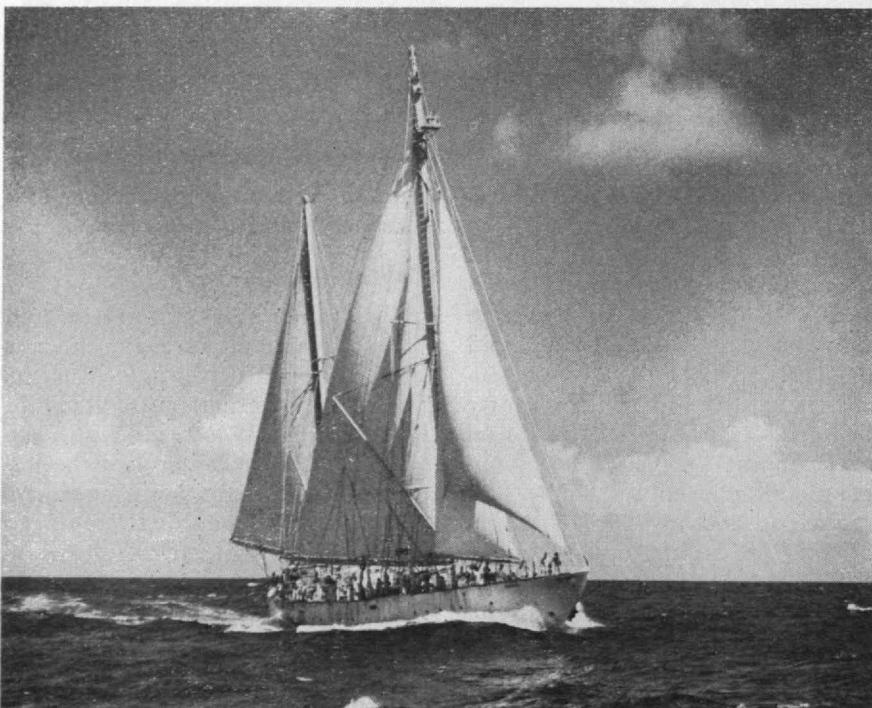
*(Concluded on page 44)*



Dave Fahlquist's duties have included helping Miss Elizabeth Bunce prepare a string of hydrophones for a study of the bottom on a local cruise, and

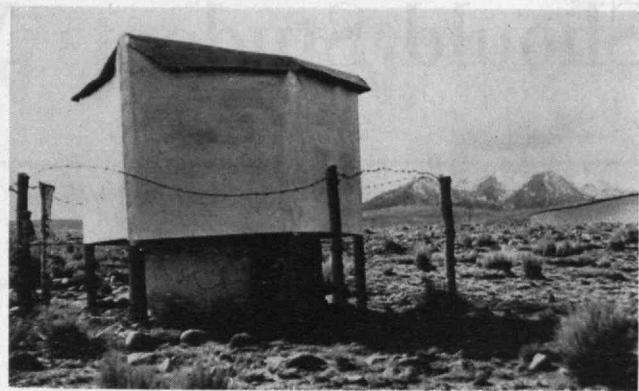


working on the 24-channel seismic amplifier aboard the *Bear*. The flagship of the Woods Hole fleet is the *Atlantis* (below). It has sailed 1,200,000 miles.



# An Electronic Trap High in the Andes

*A Bolivian Indian is watching scopes for Institute cosmic-ray researchers*



This is one of the 11 scintillation counters used to detect high-energy, cosmic-ray showers on the Altiplano.

**H**IGH ENERGY cosmic-ray showers are detected by arrays of "catching tubs," spread over many acres, and the best place for such an electronic trap is a high, flat, isolated tract. The South American Altiplano, a 50-by-400 mile plateau that extends through Bolivia from Peru to Argentina, is one of the world's best sites, and 200,000 square meters of it is occupied now by an M.I.T. Field Station.

The air pressure up in La Paz, Bolivia, is so low that boiling a "four-minute" egg takes seven minutes, and the danger from fires is so slight that the city of 400,000 has no fire department. Fifteen miles from La Paz and still higher, at an altitude of 14,000 feet, the Institute's cosmic-ray investigators have set 11 tubs out on the plain in a star-like formation.

Each tub is a scintillation counter, consisting of a plastic disk shaped like a millstone, about four inches thick and a yard in diameter, with a hole in its center, where a photo-multiplier tube is placed. When a charged particle passes through the plastic, there is a tiny splash of light, and these splashes are recorded by the tube. Later, the energy of a shower is ascertained with the help of an electronic computer.

The tubs in Bolivia are the same ones that formerly were strewn through the woods of the Agassiz Field

Station, maintained by the Harvard Observatory, in Harvard, Mass. There, in 1957, a shower with an energy of  $10^{19}$  electron volts was recorded by these tubs. This was a billion times the energy achieved with the greatest man-made atom smashers, and was an unprecedented catch. The time between drinks in Massachusetts was so long, however, that the tubs were moved 4,200 miles due south — where the lower air pressure, and the greater angle between the zenith (the highest point in the sky) and the horizon, makes it shorter.

More than a dozen showers a day are being caught now on the Altiplano. None quite as energetic as the 1957 event at Harvard has been bagged yet, but the catches there are averaging  $10^{16}$  electron volts in energy, and that is a very respectable figure.

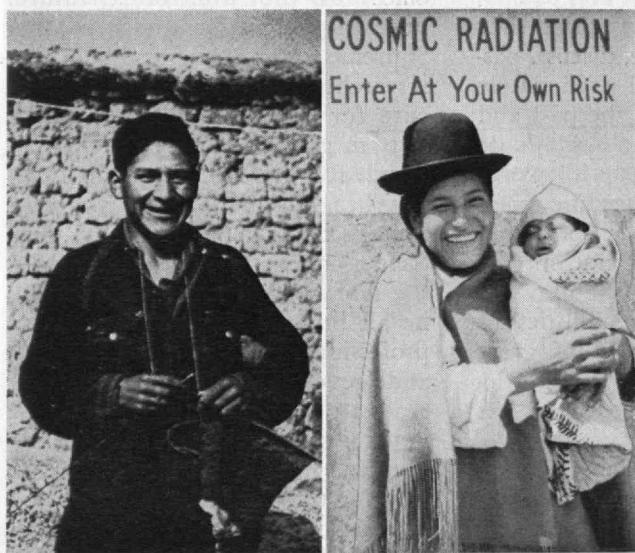
## The Hatter's Headwork

Dan W. Scott, a research assistant in the Laboratory for Nuclear Science and a candidate for a doctorate in physics next June, returned recently from La Paz with high praise both for the catches and the Bolivian crew on the job there. It is headed by Juan Hersil, a South American electrical engineer, and consists of his assistant, two girls, and an Indian watchman.

"The girls read the recorded films right in the laboratory," Scott reports. "They have been taught to read oscilloscopes, and are able to catch many errors on the spot. They punch cards as they read the films, and the cards then are air-mailed to M.I.T., where the data are analyzed by the IBM 704 computer. It would take days to process the data on a single shower by hand, but it takes less than a minute to process the information on eight showers in the M.I.T. Computation Center."

Bolivian women favor derby hats, and the Indian watchman, Sylvario Mammani, is a former hatmaker with no formal education. He has learned, nevertheless, to read a fast oscilloscope and to use his head to spare his feet. "We discovered that the positioning of the scopes had been changed on a number of mornings," says Scott, "and eventually we found that he had learned the normal wave forms and counting rates — so he had been looking at things a bit, to avoid a two-mile trip to telephone the project supervisor when something looked wrong."

*(Concluded on page 47)*



The Bolivian field station's watchman, Sylvario Mammani (left), also knits. He formerly made hats such as his wife (at right) wears, and recently has acquired new skills.

# Should Students Marry?

*A famous woman scientist questions the compatibility of wedlock and undergraduate education as we have known it*

BY MARGARET MEAD

All over the United States, undergraduate marriages are increasing, not only in the municipal colleges and technical schools, which take for granted a workaday world in which learning is mostly training to make a living, but also on the green campuses once sacred to a more leisurely pursuit of knowledge.

Before we become too heavily committed to this trend, it may be wise to pause and question why it has developed, what it means, and whether it endangers the value of undergraduate education as we have known it.

The full-time college, in which a student is free for four years to continue the education begun in earlier years, is only one form of higher education. Technical schools, nonresidence municipal colleges, junior colleges, extension schools which offer preparation for professional work on a part-time and indefinitely extended basis, institutions which welcome adults for a single course at any age: all of these are "higher," or at least "later," education. Their proliferation has tended to obscure our view of the college itself and what it means.

But the university, as it is called

in Europe — the college, as it is often called here — is essentially quite different from "higher education" that is only later, or more, education. It is, in many ways, a prolongation of the freedom of childhood; it can come only once in a lifetime and at a definite stage of development, after the immediate trials of puberty and before the responsibilities of full adulthood.

## *The "As-If" World*

The university student is a unique development of our kind of civilization, and a special pattern is set for those who have the ability and the will to devote four years to exploring the civilization of which they are a part. This self-selected group (and any other method than self-selection is doomed to failure) does not include all of the most able, the most skilled, or the most gifted in our society. It includes, rather, those who are willing to accept four more years of an intellectual and psychological moratorium, in which they explore, test, meditate, discuss, passionately espouse, and passionately repudiate ideas about the past and the future. The true undergraduate university is still an "as-if" world in which the student need not commit himself yet. For this is a period in which it is possible not only to specialize but to taste, if only for a semester all the possibilities of scholarship and science, of great commitment, and the special delights to which civilized man has access today.

One of the requirements of such a life has been freedom from responsibility. Founders and administrators of universities have struggled through the years to provide places where young men, and more recently young women, and

young men and women together, would be free — in a way they can never be free again — to explore before they settle on the way their lives are to be lived.

This freedom once, as a matter of course, included freedom from domestic responsibilities — from the obligation of wife and children or to husband and children. True, it was often confused by notions of propriety: married women and unmarried girls were believed to be improper dormitory companions, and a trace of the monastic tradition that once forbade dons to marry lingered on in our men's colleges. But essentially the prohibition of undergraduate marriage was part and parcel of our belief that marriage entails responsibility.

A student may live on a crust in a garret and sell his clothes to buy books; a father who does the same thing is a very different matter. An unmarried girl may prefer scholarship to clerking in an office; as the wife of a future nuclear physicist or judge of the Supreme Court — or possibly of the research worker who will find a cure for cancer — she acquires a duty to give up her own delighted search for knowledge and to help put her husband through professional school. If, additionally, they have a child or so, both sacrifice — she her whole intellectual interest, he all but the absolutely essential professional grind to "get through" and "get established." As the undergraduate years come to be primarily not a search for knowledge and individual growth, but a suitable setting for the search for a mate, the proportion of full-time students who are free to give themselves the four irreplaceable years is being steadily whittled down.

*(Continued on page 36)*

*Miss Mead, Associate Curator of Ethnology at the American Museum of Natural History and Adjunct Professor of Anthropology at Columbia University, is now President of the American Anthropological Association. She is a Past President of the World Federation for Mental Health.*

*Miss Mead has written 11 books, including *An Anthropologist at Work*, and *People and Places*, published last year; and holds six honorary degrees.*

# BUSINESS IN MOTION

*To our Colleagues in American Business ...*

Although miles apart in their functions the door knob and sink strainer shown below have one thing in common. Both are made from Revere Brass Strip. Revere Leaded Brass Strip was used to make the sink strainer because of the ease with which large diameter threads are machined, the excellent surface it develops for chrome plating, the inherent corrosion resistance of brass and its drawing characteristics (strainer had to be drawn from .065" gauge x 7" strip to a 2½" depth).

The Revere Brass Strip used by the manufacturer of seamless, one-piece door knobs possessed still other characteristics that made it the most desirable for that specific purpose. Because of the unique procedure by which these knobs are made the brass has to be able to stand up under some mighty rugged going. Further, the brass strip has to be of uniform gauge and be without any sign of fracture or crimping when drawn, as well as have consistently correct grain structure to insure a smooth, flaw-free surface on the finished knobs without extensive finishing and polishing operations.

These are but two of the literally thousands of ways Revere Brass Strip makes it possible for manufacturers to offer *their* customers a superior product at the lowest possible cost.

The combination of unusual properties makes Revere Brass Strip, in various anneals and tempers, equally suited to stamping and spinning. Manufac-

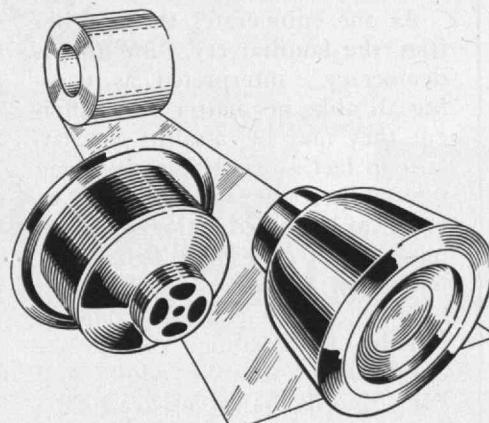
turers have found that the high ductility and malleability of various Revere Brass Alloys effect savings in time and cost because deeper draws in one operation are possible. And, because of the low, work-hardening rate, a combination of forming processes is frequently possible in making intricate shapes without the need for intermediate annealing. Should annealing be required the temperatures used are low (usually not over 1100° F.) which means lower fuel cost.

Revere Brass Strip not only permits deep draws, but fast draw speeds as well, which is particularly desirable for repetition press work or other operations where parts are produced in large quantities. This means relatively low power consumption.

Revere Brass Strip does not foul dies quickly, requiring only a minimum of die re-dressing. And one of its most desirable features is that it plates well and polishes easily, requiring only a minimum of finishing.

Revere Brass Strip in its various alloys is still another example of how, by fitting the metal to the job, it is possible to produce superior products at the lowest possible cost.

Practically every industry you can name is able to cite similar instances. So we suggest that no matter what your suppliers ship you, it would be a good idea to take them into your confidence and see if you cannot make a better product at lower costs by specifying exactly the *right* materials.

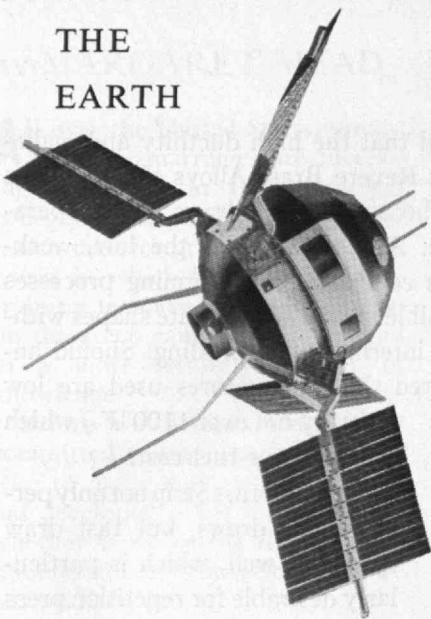


**REVERE COPPER AND BRASS INCORPORATED**

Founded by Paul Revere in 1801

Executive Offices: 230 Park Avenue, New York 17, N. Y.

# EXPLORER VI IS A SPACE LABORATORY NOW ORBITING THE EARTH



**Space Technology Laboratories** carried out the Able III program which put Explorer VI in space...one of a series of advanced scientific experiments conducted by STL in conjunction with the Air Force on behalf of NASA.

STL's leadership in military applications of space technology is illustrated by its successful accomplishments as the contractor responsible for over-all systems engineering and technical direction of the Atlas, Titan, Thor, and Minuteman programs.

Scientists and engineers with outstanding capabilities relating to these activities, are invited to investigate positions at STL.



SPACE TECHNOLOGY  
LABORATORIES, INC.  
P.O. Box 95004,  
Los Angeles 45, California

## Should Students Marry? (Continued from page 34)

Should we move so far away from the past that all young people, whether in college, in technical school, or as apprentices, expect to be married and, partially or wholly, to be supported by parents and society while they complete their training for this complex world? Should undergraduates be considered young adults, and should the privileges and responsibilities of mature young adults be theirs, whether they are learning welding or Greek, bookkeeping or physics, dressmaking or calculus? Whether they are rich or poor? Whether they come from educated homes or from homes without such interests? Whether they look forward to the immediate gratifications of private life or to a wider and deeper role in society?

As one enumerates the possibilities, the familiar cry, "But this is democracy," interpreted as treating all alike no matter how different they may be, assaults the ear. Is it in fact a privilege to be given full adult responsibilities at 18 or at 20, to be forced to choose someone as a lifetime mate before one has found out who one is, oneself — to be forced somehow to combine learning with earning? Not only the question of who is adult, and when, but of the extent to which a society forces adulthood on its young people, arises here.

Civilization, as we know it, was preceded by a prolongation of the learning period — first biologically, by slowing down the process of physical maturation and by giving to children many long, long years for many long, long thoughts; then socially, by developing institutions in which young people, still protected and supported, were free to explore the past and dream of the future. May it not be a barbarism to force them to marry so soon?

"Force" is the right word. The mothers who worry about boys and girls who don't begin dating in high school start the process. By the time young people reach college, pressuring parents are joined by college administrators, by advisers and counselors and deans, by student-made rules about exclusive possession of a girl twice dated by the same boy, by the preference

of employers for a boy who has demonstrated a tenacious intention of becoming a settled married man. Students who wish to marry may feel they are making magnificent, revolutionary bids for adulthood and responsibility; yet, if one listens to their pleas, one hears only the recited roster of the "others" — schoolmates, classmates, and friends — who are "already married."

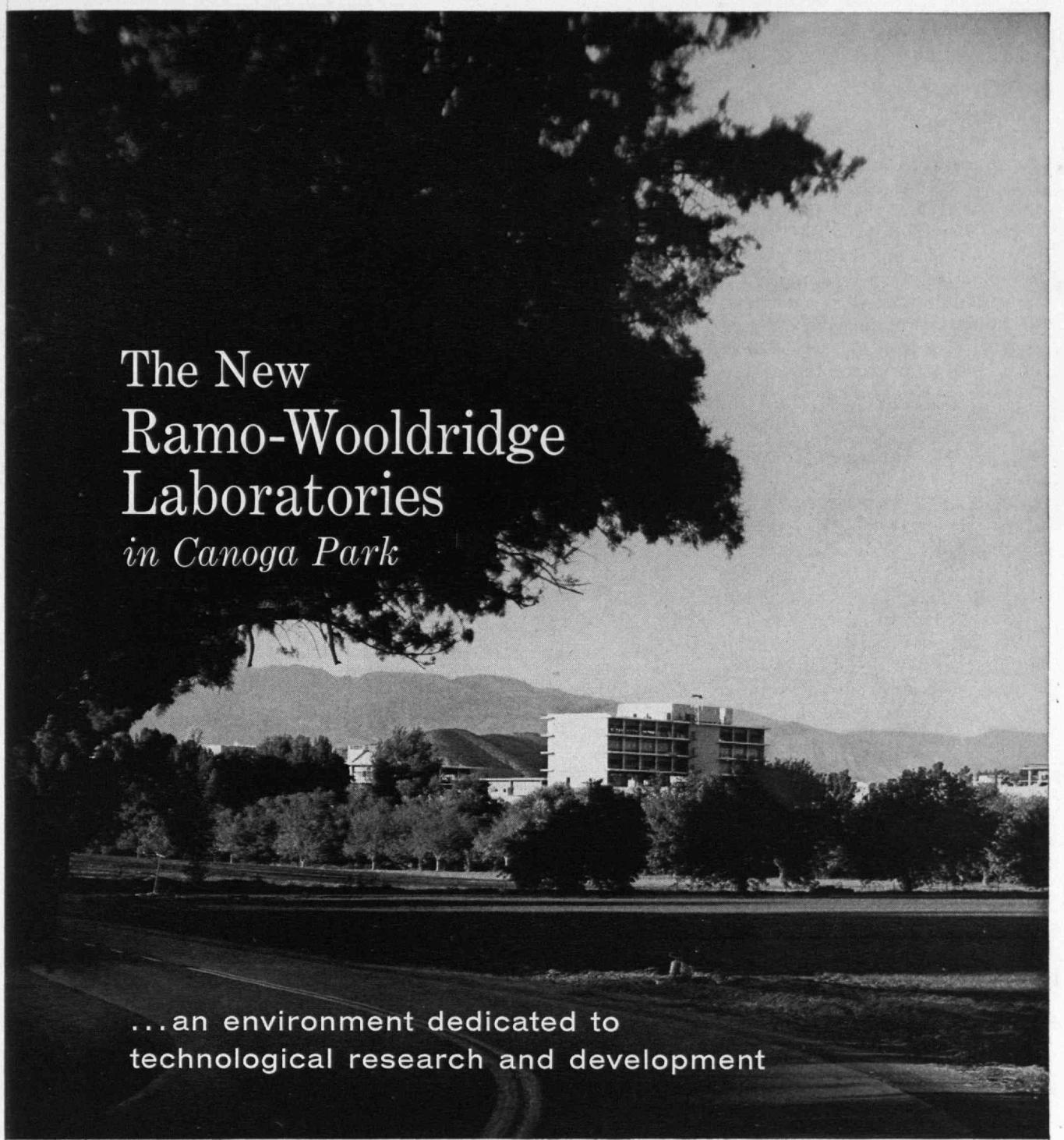
### *A New Picture*

The picture of embattled academic institutions valiantly but vainly attempting to stem a flood of undergraduate marriages is ceasing to be true. College presidents have joined the matchmakers. Those who head our one-sex colleges worry about transportation or experiment gingerly with ways in which girls or boys can be integrated into academic life so that they'll stay on campus on week-ends. Recently the president of one of our good, small, liberal arts colleges explained to me, apologetically, "We still have to have rules because, you see, we don't have enough married-student housing." The implication was obvious: the ideal would be a completely married undergraduate body, hopefully at a time not far distant.

With this trend in mind, we should examine some of the premises involved. The lower-class mother hopes her daughter will marry before she is pregnant. The parents of a boy who is a shade gentler or more interested in art than his peers hope their son will marry as soon as possible and be "normal." Those who taught GI's after the last two wars and enjoyed their maturity join the chorus to insist that marriage is steady: married students study harder and get better grades. The worried leaders of one-sex colleges note how their undergraduates seem younger, "less mature," or "more underdeveloped" than those at the big coeducational universities. They worry also about the tendency of girls to leave at the end of their sophomore year for "wider experience" — a simple euphemism for "men to marry."

And parents, who are asked to contribute what they would have contributed anyway so that the

*(Continued on page 38)*



# The New Ramo-Wooldridge Laboratories *in Canoga Park*

...an environment dedicated to  
technological research and development

The new Ramo-Wooldridge Laboratories in Canoga Park, California, will provide an excellent environment for scientists and engineers engaged in technological research and development. Because of the high degree of scientific and engineering effort involved in Ramo-Wooldridge programs, technically trained people are assigned a more dominant role in the management of the organization than is customary.

The ninety-acre landscaped site, with modern buildings grouped around a central mall, contributes to the

academic environment necessary for creative work. The new Laboratories will be the West Coast headquarters of Thompson Ramo Wooldridge Inc. as well as house the Ramo-Wooldridge division of TRW.

The Ramo-Wooldridge Laboratories are engaged in the broad fields of electronic systems technology, computers, and data processing. Outstanding opportunities exist for scientists and engineers.

*For specific information on current openings write to Mr. D. L. Pyke.*



**THE RAMO-WOOLDRIDGE LABORATORIES**

8433 FALLBROOK AVENUE, CANOGA PARK, CALIFORNIA

## Should Students Marry?

(Continued from page 36)

young people may marry, fear — sometimes consciously and sometimes unconsciously — that the present uneasy peacetime will not last, that depression or war will overtake their children as it overtook them. They push their children at ever younger ages, in Little Leagues and eighth-grade proms, to act out — quickly, before it is too late — the adult dreams that may be interrupted. Thus they too consent, connive, and plan toward the earliest possible marriages for both daughters and sons.

### The Successful Marriage

Undergraduate marriages have not been part of American life long enough for us to be certain what the effect will be. But two ominous trends can be noted.

One is the "successful" student marriage, often based on a high school choice which both sets of parents have applauded because it assured an appropriate mate with the right background, and because

it made the young people settle down. If not a high school choice, then the high school pattern is repeated: finding a girl who will go steady, dating her exclusively, and letting the girl propel the boy toward a career choice which will make early marriage possible.

These young people have no chance to find themselves in college because they have clung to each other so exclusively. They can take little advantage of college as a broadening experience, and they often show less breadth of vision as seniors than they did as freshmen. They marry, either as undergraduates or immediately upon graduation, have children in quick succession, and retire to the suburbs to have more children — bulwarking a choice made before either was differentiated as a human being. Help from both sets of parents, begun in the undergraduate marriage or after commencement day, perpetuates their immaturity. At 30 they are still immature and dependent, their future mortgaged for 20 or 30 years ahead, neither husband nor wife realizing the promise that a different kind of

undergraduate life might have enabled each to fulfill.

Such marriages are not failures, in the ordinary sense. They are simply wasteful of young, intelligent people who might have developed into differentiated and conscious human beings. But with four or five children, the husband firmly tied to a job which he would not dare to leave, any move toward further individual development in either husband or wife is a threat to the whole family. It is safer to read what both agree with (or even not to read at all and simply look at TV together), attend the same clubs, listen to the same jokes — never for a minute relaxing their possession of each other, just as when they were teen-agers.

Such a marriage is a premature imprisonment of young people, before they have had a chance to explore their own minds and the minds of others, in a kind of desperate, devoted symbiosis. Both had college educations, but the college served only as a place in which to get a degree and find a mate from the right family background, a background which subsequently swallows them up.

### The Unsuccessful Marriage

The second kind of undergraduate marriage is more tragic. Here, the marriage is based on the boy's promise and the expendability of the girl. She, at once or at least as soon as she gets her bachelor's degree, will go to work at some secondary job to support her husband while he finishes his degree. She supports him faithfully and becomes identified in his mind with the family that has previously supported him, thus underlining his immature status. As soon as he becomes independent, he leaves her. That this pattern occurs between young people who seem ideally suited to each other suggests that it was the period of economic dependency that damaged the marriage relationship, rather than any intrinsic incompatibility in the original choice.

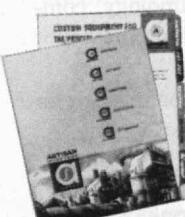
Both types of marriage, the "successful" and the "unsuccessful," emphasize the key issue: the tie between economic responsibility and marriage in our culture. A man who does not support himself is

## What Artisan Industries can do for you...

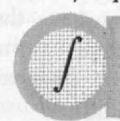
*This family of companies offers a unique, integrated service for the manufacture of process equipment*

**ARTISAN METAL PRODUCTS, INC.** — Specialists in process equipment and pilot plants: Evaporation • Distillation • Waste recovery • Heat transfer • Solvent extraction and recovery • Organic synthesis • Nuclear process equipment. Specialists in mechanical equipment: Test equipment • Special machines • Packaging equipment • Continuous transfer and treating equipment • Nuclear mechanical devices. **METAL FABRICATORS CORPORATION** — Fabrication for the electronics industry • Specialized components for machine tool builders • Fractionating trays for the chemical and petroleum industries • Missile and rocket components • Aircraft sheet metal work. A-N Certified spot, seam, heliarc and electric welding.

**THE KONTRON COMPANY, INC.** — Ajust-o-film centrifugal processing equipment • Thermalizers. **THE JET-VAC CORPORATION** — Jet ejectors for the processing and power industries • Steam jet ejectors for vacuum service • Ejectors to operate on special process fluids or applications • Barometric condensers — surface condensers. **HI-SPEED EQUIPMENT, INC.** — Film spray developing machines — black and white • Film developing machines — color • Silver recovery systems • Film laboratory equipment.



**FREE** — Fact-packed folder gives full information on the many services of each company. Invaluable reference material for anyone who will ever need special or production equipment. Write for your copy today, or phone TWinbrook 3-6800.



**ARTISAN  
INDUSTRIES**  
70 Pond Street  
Waltham 54, Mass.

not yet a man, and a man who is supported by his wife or lets his parents support his wife is also only too likely to feel he is not a man. The GI students' success actually supports this position: they had earned their GI stipend, as men, in their country's service. With a basic economic independence they could study, accept extra help from their families, do extra work, and still be good students and happy husbands and fathers.

#### **When Help Is To Be Given**

There are, then, two basic conclusions. One is that under any circumstances a full student life is incompatible with early commitment and domesticity. The other is that it is incompatible only under conditions of immaturity. Where the choice has been made maturely, and where each member of the pair is doing academic work which deserves full support, complete economic independence should be provided. For other types of student marriage, economic help should be refused.

This kind of discrimination would remove the usual dangers of parent-supported, wife-supported, and too-much-work-supported student marriages. Married students, male and female, making full use of their opportunities as undergraduates, would have the right to accept from society this extra time to become more intellectually competent people. Neither partner would be so tied to a part-time job that relationships with other students would be impaired. By the demands of high scholarship, both would be assured of continued growth that comes from association with other high-caliber students as well as with each other.

But even this solution should be approached with caution. Recent psychological studies, especially those of Piaget, have shown how essential and precious is the intellectual development of the early post-pubertal years. It may be that any domesticity takes the edge off the eager, flaming curiosity on which we must depend for the great steps that Man must take, and take quickly, if he and all living things are to continue on this earth.

*Copyright, 1960, by Editorial Projects for Education, Inc. All rights reserved.*

## **PRIME NUMBER IN TECHNICAL PROBLEM SOLVING . . .**

**UN 8-8050**

Do you have a problem that needs solving in Mechanical, Nuclear, or Chemical Engineering, in Systems and Control Dynamics or in Business Research? . . . Then call UNiversity 8-8050 . . . the Prime Number in Technical Problem Solving . . . for a preliminary discussion with our General Manager and a detailed brochure . . . or if more convenient, write to J. P. Barger, General Manager.

**MICROTECH**  
639 Massachusetts Ave.,



**RESEARCH**  
Cambridge 39, Mass.

**COMPANY**

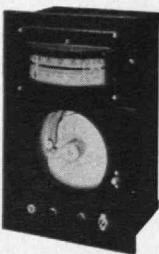
# SPECIFIED FOR MAKING SEMI-CONDUCTORS



*Gardsman*  
by WEST

## Model JSBG Stepless Program Controllers

Part of diffusion  
furnace room,  
Hoffman Electronics  
Corporation,  
El Monte, California.  
Process is one step in  
critical manufacture of  
silicon solar cells.



Semi-conductors are grown by a highly integrated process, involving time-temperature control. Only the most precise control delivers the required quality, uniformity, efficiency.

Leading producers of semi-conductors find best results from the market's most compact, integrated Stepless Program Controller: by West. This unit infinitely modulates heater power and coordinates time-and-temperature control for even the most unstable systems.

Also available: models combining Gardsman off-on, proportioning or 3-position controllers with programming. All are *tubeless* and noted for minimum maintenance and operating requirements. Ask your West representative or write for Bulletin JSB and JG.

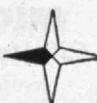


**WEST** *Instrument*  
CORPORATION  
SALES OFFICES IN PRINCIPAL CITIES

4355C W. MONTROSE, CHICAGO 41, ILL.

British Subsidiary:  
WEST INSTRUMENT LTD.,  
52 Regent St., Brighton 1, Sussex  
Represented in Canada by Davis Automatic Controls, Ltd.

the trend is to WEST

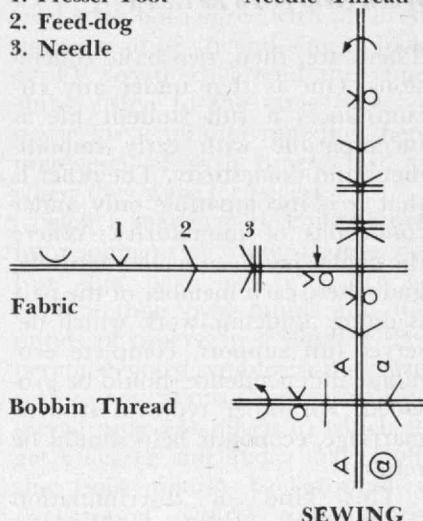


## Staying Ahead in Textiles

(Continued from page 23)

of less concern in this work than what happens. The entire processing from fiber to fabric can be shown on a single sheet of  $8\frac{1}{2}'' \times 11''$  paper. Easy comparison of entire processes, therefore, is simple. With the restrictions of existing mechanisms and machines removed from the picture, it also becomes

1. Presser Foot      Needle Thread  
2. Feed-dog  
3. Needle



Here sewing is shown symbolically.

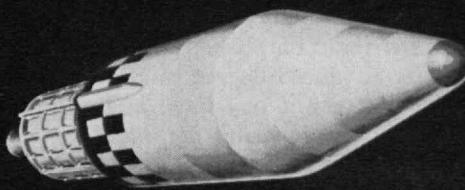
possible to synthesize operations and employ the best available information from such fields of engineering as fluid mechanics, aerodynamics, thermodynamics, materials, control systems, applied mechanics and design to produce the desired result.

Craftsmanship is vanishing from the textile industry and may not return because of the pressures of quantity production, but imagination and clear thinking about textile fiber processing can be stimulated and made more effective by rational and widespread use of symbols to denote the basic actions involved in handling fibers.

### Among the Pioneers

Since the shift of emphasis from machine design and, later, from textile testing to research, financial support has been provided by the Textile Foundation. It has made grants of money approximating \$100,000 and has supported by way of salary several Fellows who have worked in the textile laboratory.

(Concluded on page 42)



## EXPANDING THE FRONTIERS OF SPACE TECHNOLOGY

Lockheed Missiles and Space Division is systems manager for such major, long-range projects as the Navy POLARIS Fleet Ballistic Missile; the AGENA satellite in the DISCOVERER program, under the direction of the Air Force Ballistic Missile Division (ARDC); MIDAS infrared detection satellite system; SAMOS satellite program; Air Force X-7; and Army KINGFISHER.

These programs include: applied mathematics; celestial mechanics; computer research and development; electromagnetic wave propagation and radiation; electronics; the flight sciences; human engineering; hydrodynamics; man in space; materials and processes; operations research and analysis; ionic, nuclear and plasma propulsion and exotic fuels; sonics; space communications; space medicine; space navigation; and space physics.

Headquarters for the Division are at Sunnyvale, California, on the San Francisco Peninsula, and research and development facilities are in the Stanford Industrial Park

in Palo Alto and at Van Nuys in the San Fernando Valley. Facilities are new and modern and include the latest in technical equipment. A 4,000 acre Division-owned static test base in the Ben Lomond mountains near Santa Cruz provides for all phases of static field test. In addition, flight test facilities are provided at Cape Canaveral, Florida, and Vandenberg AFB, Santa Maria, California.

### ENGINEERS AND SCIENTISTS

Such programs reach into the future and deal with unknown and stimulating environments. It is a rewarding future with a company that has an outstanding record of progress and achievement. If you are experienced in any of the above areas, or in related work, we invite your inquiry. Please write: Research and Development Staff, Dept. B-52FF, 962 W. El Camino Real, Sunnyvale, California. U.S. citizenship required or existing Department of Defense clearance.

**Lockheed** / **MISSILES AND SPACE DIVISION**

SUNNYVALE, PALO ALTO, VAN NUYS, SANTA CRUZ, SANTA MARIA, CALIFORNIA • CAPE CANAVERAL, FLORIDA • ALAMOGORDO, NEW MEXICO • HAWAII

## Staying Ahead in Textiles

(Concluded from page 40)

Pioneering work was done by Mitchell A. Sieminski, '36, George H. Hotte, '43, Erwin O. Kruegel, '32, and Gordon Osborne in textile microscopy. All of these men have continued in responsible positions in the textile industry, and all are still close to, or engaged in, research. The pioneering work of Herbert Leaderman, '38, as a Textile Foundation Fellow in the field of the visco-elastic, and particularly the creep properties of textile fibers, is still authoritative. Application of statistical methods to textiles was undertaken by Harold R. Bellinson, '34; while Harold Hindman, '39, George S. Burr, '41, and Cyril M. Krook, '42, formed the original staff of the Slater Laboratory.

There has been active co-operation for many years with, first, the Division of Industrial Co-operation, and now the Division of Sponsored Research, in carrying through research contracts for industry and the armed services, including the Quartermaster Corps and the Air Force.

In the educational part of the program, every effort is being made to utilize the background knowledge and research results of the groups concerned with engineering. This is accomplished by ensuring that advanced degree candidates in textile technology have a grounding in engineering comparable to that of our mechanical or chemical engineers. There is also interest in elective participation in our program by students in Business and Engineering Administration.

Better liaison is needed between top management and research, and this requires bilateral training. The business executive in textiles should have enough research know-how to make intelligent decisions, about both the research program itself and the administration of the business; and the research director should appreciate the problems of management, to be able to plan and conduct research which will be worth-while on its own merits, and also of immediate practical importance to the company.

In the introduction for *Textile Research*, one of the first Technology Press books, Vannevar Bush,

'16, wrote: "The large size private research laboratory, such as exists in the telephone field, in electrical manufacture, or in the manufacture of certain types of chemical products, does not exist in the textile field, and the results of a single-minded aggressive private attack on the general problems of textiles is, hence, absent. Its place is taken by various governmental, university, cooperative, and private enterprises which cannot, in the very nature of things, proceed as rapidly or as far. They are doing remarkable work, as some of the recorded results of this and other volumes testify, but there is a great deal that remains to be done. Their accomplishments prove that we can learn much and produce useful and desirable things even when the effort is somewhat scattered. There is no field in which there is a greater opportunity for accomplishment than that of textiles. The key to accomplishment is research. It need not be complex, in order to be useful, but it certainly should be intelligent."

With this, we in the textile division heartily agree.

**NEW VIBRATING CAPACITOR**

A vibrating-reed type capacitance modulator for use in measuring currents as low as  $10^{-16}$  amperes. Long term stability for process control. Drift  $\pm 0.2$  millivolts per day, non-cum.

Write for Catalog 523.

**STEVENS INCORPORATED ARNOLD**

7 ELKINS STREET  
SOUTH BOSTON 27, MASS.

12-1/4

**Designing a Conveyor?**

**FLAT-FLEX WIRE BELT**

**A PRODUCTION BOOSTER FOR ANY INDUSTRIAL PROCESS**

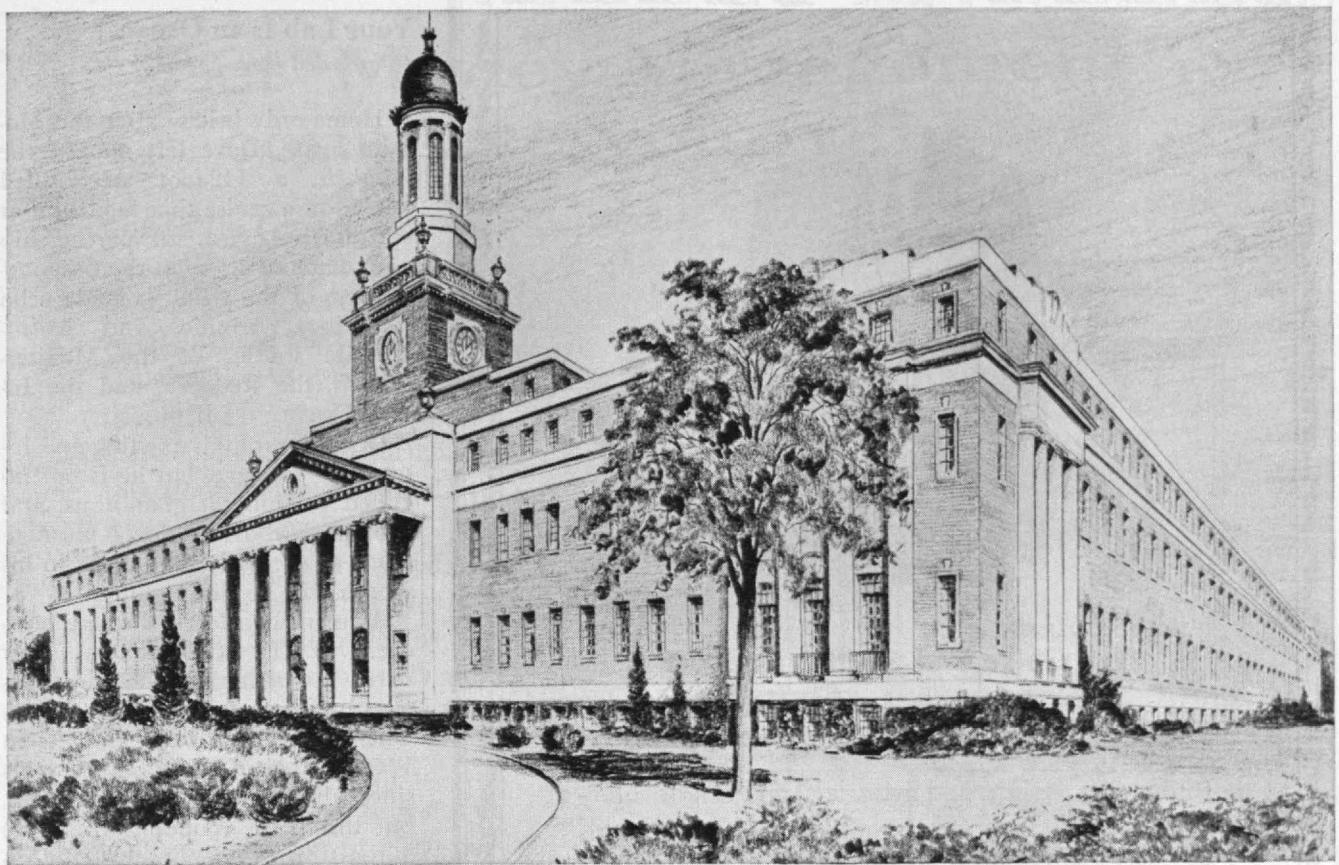
- Minimum Contact with Materials
- Flow thru Mesh
- Positive Gear Drive
- Easy to Install, Guide, Clean, Maintain
- Straight Runs or Turns
- Special Alloys for Higher Temperatures

**WIRE BELT COMPANY OF AMERICA**

6 River Street — Winchester, Mass.

Fred W. Greer '25

G. J. Harrington '24



Massachusetts Mutual Home Office

## M.I.T. men in good company

**M.I.T. men** who are policyholders, field representatives or staff members of the Massachusetts Mutual are in good company . . . with a *good Company*.

You will like the Massachusetts Mutual, one of a small group of life insurance companies known and respected as the "Old New England Companies."

Since the Massachusetts Mutual Life Insurance Company was founded in 1851,

its management has been sound and conservative, its policies progressive and liberal, and its practices always dedicated to the best interests of its policyholders.

Massachusetts Mutual representatives — most of them husbands, fathers and homeowners — are men of high character. They are successful men, the kind you like to know and do business with, the kind you are glad to welcome into your home.

## MASSACHUSETTS MUTUAL *Life Insurance Company*

SPRINGFIELD, MASSACHUSETTS • ORGANIZED 1851

*Some of the Eastern Group alumni in Massachusetts Mutual service:*

### LAFAYETTE

David B. Adler, '17, Orlando  
M. Holmes Shoemaker, '18, Elmira  
David K. Aldrich, '38, Allentown  
Frank W. Hiller, '43, Home Office  
Benjamin C. Youngman, '44, Pittsburgh  
Richard A. Faust, '56, Binghamton

### LEHIGH

Wilbur R. Heck, '20, Reading  
Russell E. Hoaster, '31, San Antonio  
Edward Billstein, Jr., '40, Atlanta  
R. Lester Dodson, Jr., '44, East Orange  
Austin E. Short, '57, Allentown

### M.I.T.

Lyman L. Tremaine, '23, New York  
Harold G. Ingraham, Jr., '49, Home Office  
U. OF N. H.  
Ward N. Boylston, '25, Brattleboro  
Ernest W. Furnans, Jr., '37, Home Office  
Arthur Graham, '42, Home Office  
Roger B. Gould, '50, Home Office  
Richard W. Vogel, '51, Cleveland  
Willard Jones, '54, Home Office  
Robert Donegan, '54, Home Office  
Gerald E. Doten, '55, Home Office  
John Barnes, '55, Home Office  
Dora-Lee Roulston, '59, Home Office  
Norman A. Field, Haverhill

### PENN STATE

Rudolph G. Kraft, '18, Home Office  
Donald M. Wieland, '19, Williamsport  
Thomas H. Levering, '25, Williamsport  
John L. Macdonald, '30, Bloomsburg  
Charles P. Kennedy, '32, Chicago  
Richard J. Fader, '51, Jacksonville  
Charles B. Oeksridder, '52, Albuquerque  
Sylvan S. Taub, '53, Philadelphia  
Kenneth C. Kramer, '54, State College  
Lawrence F. Hill, Niagara Falls



**for cruise and Southern resort  
OUR COLORFUL SPORTWEAR  
featuring our own exclusive styling**

Interesting designs and materials, and bright colorings highlight cruise and Southern resort wear this season. Our selections include:

(shown) New 'wash-and-wear' Odd Jacket of Dacron\*-and-cotton in a neat checked pattern with patch pockets. Brown-and-tan or navy on natural grounds, \$37.50

Lightweight Odd Jacket of Dacron\*-and-wool in unusually interesting new colorings in good-looking plaid and striped patterns, \$70

Odd Trousers of washable Brookswear, our original Dacron\* and cotton blend in bamboo, navy, tan, red, mustard, charcoal or medium grey, \$16.50

Odd Trousers of Dacron\*-and-wool in medium or charcoal grey or olive-brown, \$25

Also Bermuda shorts, sport shirts and other items

\*Du Pont's fiber

ESTABLISHED 1818

**Brooks Brothers**  
CLOTHING  
Men's Furnishings, Hats & Shoes

346 MADISON AVE., COR. 44TH ST., NEW YORK 17, N.Y.

111 BROADWAY, NEW YORK 6, N.Y.

BOSTON • CHICAGO • LOS ANGELES • SAN FRANCISCO

**Your Lab Is an Ocean**

(Concluded from page 32)

Home only briefly after the Mo-hole sortie, Dave left aboard the *Atlantis*, a 142-foot steel-hulled ketch, on a cruise that kept him at sea until August. In partnership with Lamont's *Vema*, the oceanographers of the *Atlantis* made echo soundings, seismic, and hydrographic studies of the Mediterranean, the Red Sea, and the Indian Ocean.

Oceanography is exciting and interesting to Dave, but he is not inclined to think it glamorous, and urbanites who look for *I must go down to the seas again* traces in his speech will be disappointed.

As men who learn the sea, however, M.I.T. students can only partly resist the kind of life it dictates; many, including Dave, do not. There have been some changes in Woods Hole in the six score years since whalers put to sea from there, but this little (population: 1,000) outpost on the ocean, clustered on the low hills looking out on Vineyard Sound, still wears the aspect and the history of the sea. Ships of oceanography now beat out across the Sound, toward all the oceans that the whaling men knew, and more; yet there is still perhaps a bit of Silas Jones and his whaling men in the contemporary voyages.

Woods Hole will probably never again welcome back a mariner just like Silas Jones. The whaling ship *Ashawonks*, built in Woods Hole and named after a Succonessitt (Falmouth) Indian, was on a four-year voyage in 1835 and had anchored off Bering's Island in the Pacific in quest of fruit for the crew. Natives who appeared, however, tended to be inhospitable; seizing the whalers' huge cutting spades, they slashed and terrorized the crew. Jones, who began the battle as third mate, became captain, by virtue of the decapitation of the initial captain, the sudden death of the first mate, and the voluntary departure overboard of the second. But the enemy was routed, thanks to Jones, and he was given a hero's accolade on his return.

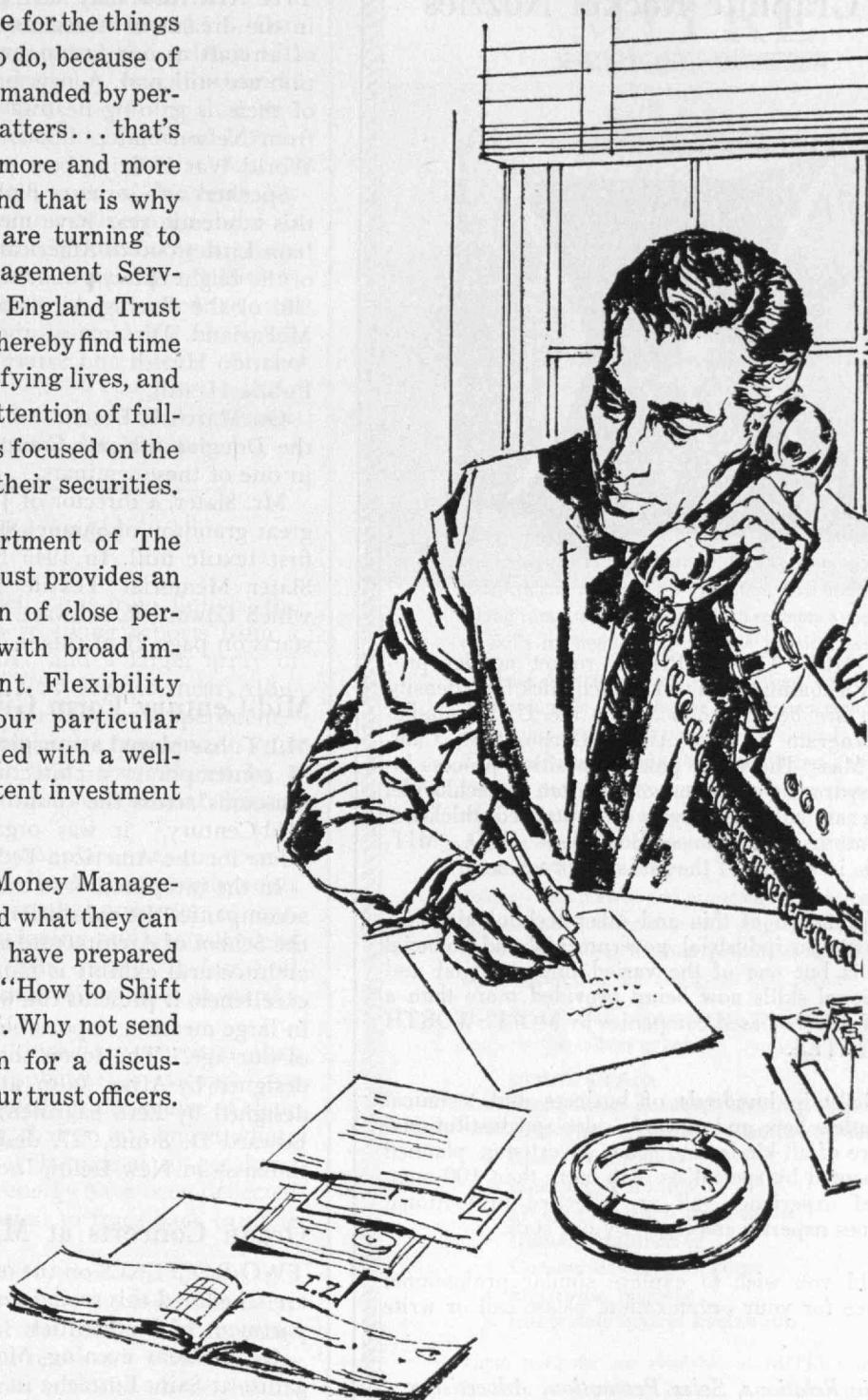
In the science of the sea, Dave Fahlquist and his colleagues, of course, confront a quieter and more truly profound kind of drama than the earlier men of Woods Hole.

# Let "Money Management" conserve your time

Too Little Time for the things you most want to do, because of too much time demanded by personal financial matters... that's the situation of more and more people today. And that is why more and more are turning to the Money Management Services of The New England Trust Company. They thereby find time to lead more satisfying lives, and know that the attention of full-time specialists is focused on the management of their securities.

The Trust Department of The New England Trust provides an ideal combination of close personal attention with broad impartial judgment. Flexibility for meeting your particular objectives is joined with a well-informed, consistent investment philosophy.

To describe our Money Management Services and what they can mean to you, we have prepared a new booklet, "How to Shift Burdens Wisely". Why not send for it? Or stop in for a discussion with one of our trust officers.



## The New England Trust Company

135 DEVONSHIRE STREET, BOSTON 7, MASS.

Telephone: HAncock 6-8005

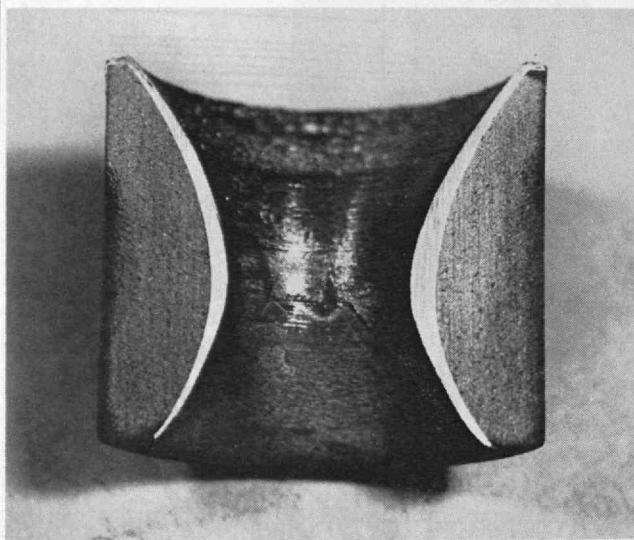
Back Bay Branch: 99 Newbury Street

Member of the  
Federal Deposit  
Insurance Corporation



Incorporated 1869

## New Process Coats Tungsten on Graphite Rocket Nozzles



EXPERIMENTAL GRAPHITE rocket nozzles protected by a coating of up to 1/8-inch thick high density tungsten are being produced for the U. S. missile-space program by The Alloyd Corporation, Cambridge, Mass. The vapor phase deposition process involves hydrogen reduction of tungsten hexachloride, forming an adherent layer of controlled thickness and contour. Dr. Romeo Bourdeau (Sc.D., MIT, 1956) is in charge of the research program.

Interpretation of this and other technological developments for industrial, governmental and financial publics is but one of the varied informational and promotional skills now being provided more than a score of science-based companies by MOLESWORTH ASSOCIATES.

Publicity in hundreds of business and technical press outlets here and abroad; sales and institutional literature of all kinds, and space advertising, planned and executed by specialists with more than 100 man-years of experience—all are effective promotional techniques expertly employed by our staff.

Should you wish to explore similar professional assistance for your organization, please call or write us.

*Public Relations, Sales Promotion, Advertising  
In Atomic Energy, Electronics, Chemistry, Metallurgy*

### MOLESWORTH ASSOCIATES

260 Madison Avenue,  
New York 16, N. Y.  
MURRAY HILL 5-8811

73 Tremont Street,  
Boston 8, Mass.  
CAPITOL 7-9712

### Trend of Affairs

(Continued from page 20)

### Flight Transportation Seminars

THE AIR AGE may have given way to the space age in the dreams of American youth, but the headaches of aircraft as our fastest-growing form of transportation are still real. A new program to help cure some of them is gaining headway at M.I.T. under a grant from Nelson Slater, '15, an industrial executive and World War II flying boat pilot.

Speakers at a series of flight transportation seminars this academic year have included Vice-president William Littlewood of American Airlines, Jerome Lederer of the Flight Safety Foundation, William H. Cook, Jr., '38, of the Boeing Airplane Company, and Ross A. McFarland, Director of the Guggenheim Center for Aviation Health and Safety in the Harvard School of Public Health.

On March 7, Donald W. Douglas, '14, President of the Douglas Aircraft Company, Inc., will participate in one of these seminars.

Mr. Slater, a director of J. P. Stevens Company, is a great grandson of Samuel Slater, founder of America's first textile mill. In 1945 he established the Samuel Slater Memorial Textile Research Laboratories to which Edward R. Schwarz, '21, refers in an article that starts on page 21 of this issue.

### Mid-Century Form Givers

M.I.T. has played a conspicuous role in an exhibition of contemporary architecture that has been touring museums across the country. Called "Form Givers at Mid-Century," it was organized and sponsored by *Time* for the American Federation of Arts.

In the introduction to the book of photographs that accompanies the exhibition, Pietro Belluschi, Dean of the School of Architecture and Planning, wrote: "This architectural exhibit is more than a proclamation of excellence; it presents the work of men who have been in large measure responsible for the New Architecture of our age." The forms shown include Baker House, designed by Alvar Aalto, and the Kresge Auditorium, designed by Eero Saarinen; and the "givers" include Edward D. Stone, '27, designer of the dazzling U.S. Embassy in New Delhi, India.

### Organ Concerts at M.I.T.

TWO RECITALS on the organ of Kresge Auditorium are scheduled this spring under the auspices of the Department of Humanities:

On Tuesday evening, March 8, André Marchal, organist at Saint-Eustache in Paris, will play. He is particularly noted for his performances of the works of Bach and the early French masters.

On Tuesday evening, May 3, Lawrence Moe, organist at the University of California in Berkeley, will be heard. His recordings of the Handel Concertos in the M.I.T. Chapel have contributed much to his renown.

Tickets for each concert are \$2.00 and may be ordered from M.I.T. Organ Concerts, Room 61-026, M.I.T., Cambridge 39, Mass.

## For the Smithsonian

THE CENTRAL UNIT of an exhibit planned at the Smithsonian Institution in Washington will be a portrait in bronze of General James H. Doolittle, '24, a member of the M.I.T. Corporation. The exhibit will recall his transcontinental flights, the Tokyo raid, and other highlights of his career. The life-size bust is the work of Madame Suzanne Silvercruys, who is widely known as a sculptress, lecturer, and author. It was presented to the Smithsonian by H. S. M. Burns, President of the Shell Oil Company, and accepted by the Institution's Secretary Leonard Carmichael, for display in the National Air Museum.

## An Electronic Trap in the Andes

(Concluded from page 33)

In addition to the punched cards from Bolivia, the M.I.T. cosmic-ray group is receiving reports from a smaller field station in India, and a larger array of tubs on Volcano Ranch in New Mexico, near Albuquerque. This world-wide "Air Shower Experiment," has been under way for several years now, and its continuance for the next three years was assured by a recent grant of \$176,000 from the National Science Foundation.

Although no specific, commonplace uses for cosmic radiation have been foreseen, both the astrophysicists and students of the fundamental constitution of matter are finding the data intriguing and are confident that it will prove useful to them. It may, in fact, end some of the embarrassing uncertainty now about the origin of cosmic rays.

Most of the billions of cosmic-ray particles that plunge into the earth's atmosphere every second have been so deflected and scrambled, in the course of their long journeys through space, that no one knows where they originated or how they happened to get here. Those which have the most energy have been deflected the least and may be the easiest to trace back to their starting points.

Bruno Rossi, Professor of Physics, who directs the M.I.T. research program, says that the results thus far suggest "that our picture of the galaxy and its magnetic fields needs a thorough revision." This accounts for the astrophysicist's intense curiosity about the invisible showers being caught in the electronic tubs. And the nuclear physicists are fascinated by the fantastically high energies that have been reported.

"At  $10^{19}$  electron volts," Professor Rossi points out, "a proton's kinetic energy is something like 10 billion times the energy stored in its mass. In fact, this almost unimaginably tiny object carries enough energy to keep a one-watt light bulb burning for about a second!"



ENGINEERS • SCIENTISTS

THE  
**MITRE**  
CORPORATION

*Invites You to Investigate the*

## PROFESSIONAL OPPORTUNITIES AVAILABLE

*in Integrated System Engineering*

MITRE, a systems engineering and development organization, is responsible for providing engineering solutions to the problems involved in integrating Air Defense systems. Formed under the sponsorship of the Massachusetts Institute of Technology, this independent non-profit corporation has undertaken a long-range work program which requires a spectrum of skills in engineering and the physical sciences.

These skills are utilized in the design, development and evaluation of the diverse components, equipments and subsystems from which evolve total systems. These subsystems consist of radar systems, communications, data links, computers, data processing systems, and defensive weapons. This continuing system engineering function takes cognizance of the immediate and long-term threat, the total defense technology—both present and projected—and the complex logistics of air defense with a programmed methodology that insures the best possible defense system, at minimum cost, for any given time period.

Technical Staff appointments are currently being made in the following areas:

- System Design
- Component Research and Development
- Real-Time Computer Control Systems
- Radar Techniques
- Operations Analysis
- Weapons System Integration
- Human Engineering
- Communications Systems
- Electronic Warfare
- Integrated System Evaluation

These positions are available at MITRE's modern facilities in suburban Boston, Massachusetts, Fort Walton Beach, Florida, and Montgomery, Alabama.

*To arrange an immediate confidential interview, send resume to Dana N. Burdette, Personnel Director, Dept. 7-D*

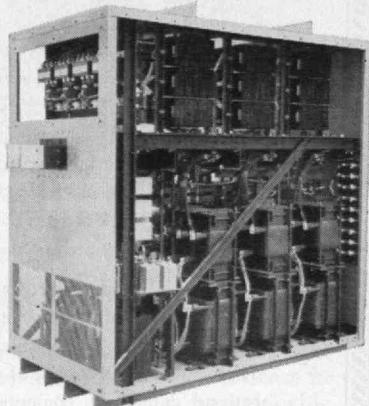
THE MITRE CORPORATION  
244 Wood Street • Lexington 73, Massachusetts

# HEVI-DUTY

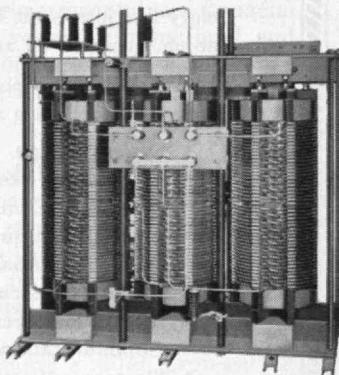
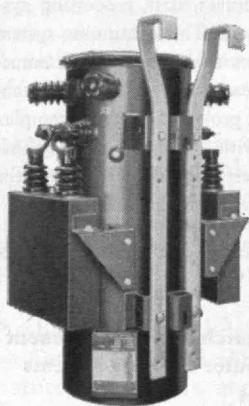
## IN STEP with tomorrow's stepped-up DEMANDS

**DRY TYPE TRANSFORMERS,  
CONSTANT CURRENT REGULATORS  
AND SATURABLE REACTORS**

**CONSTANT  
CURRENT  
REGULATOR**  
used in an  
industrial  
electrochemical  
process.



**CONSTANT CURRENT  
REGULATOR**  
for street, subway and  
airport lighting.



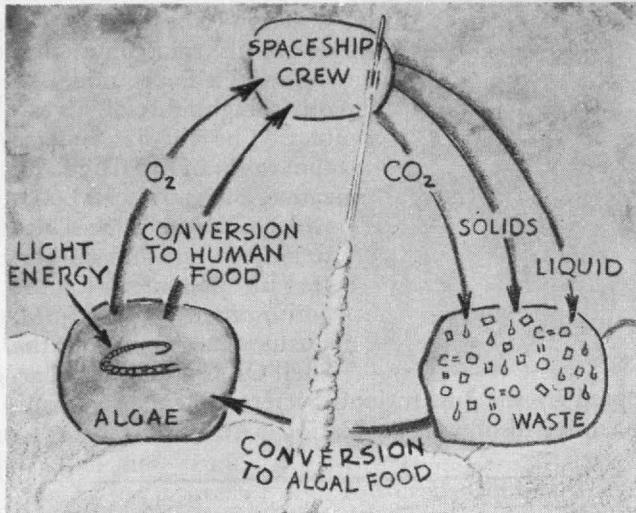
**DRY TYPE TRANSFORMER,**  
300 KVA, for unit substation. Other transformers  
are available from 5VA to 2000 KVA as well as  
Saturable Reactors from 25VA to 500 KVA.

## HEVI-DUTY ELECTRIC COMPANY

**MILWAUKEE 1, WISCONSIN**

Harold E. Koch, '22, President  
Elton E. Staples, '26, Vice President  
Chester Meyer, '36, Assistant Secretary

## Talk of Our Times



### Menus for Space Travelers

*In the first Popular Science Lecture sponsored by the M.I.T. Society of Arts this winter, Samuel A. Goldblith, '40, Professor of Food Technology, described the complexity of the food, oxygen, and water problems on space cruises. He said in part:*

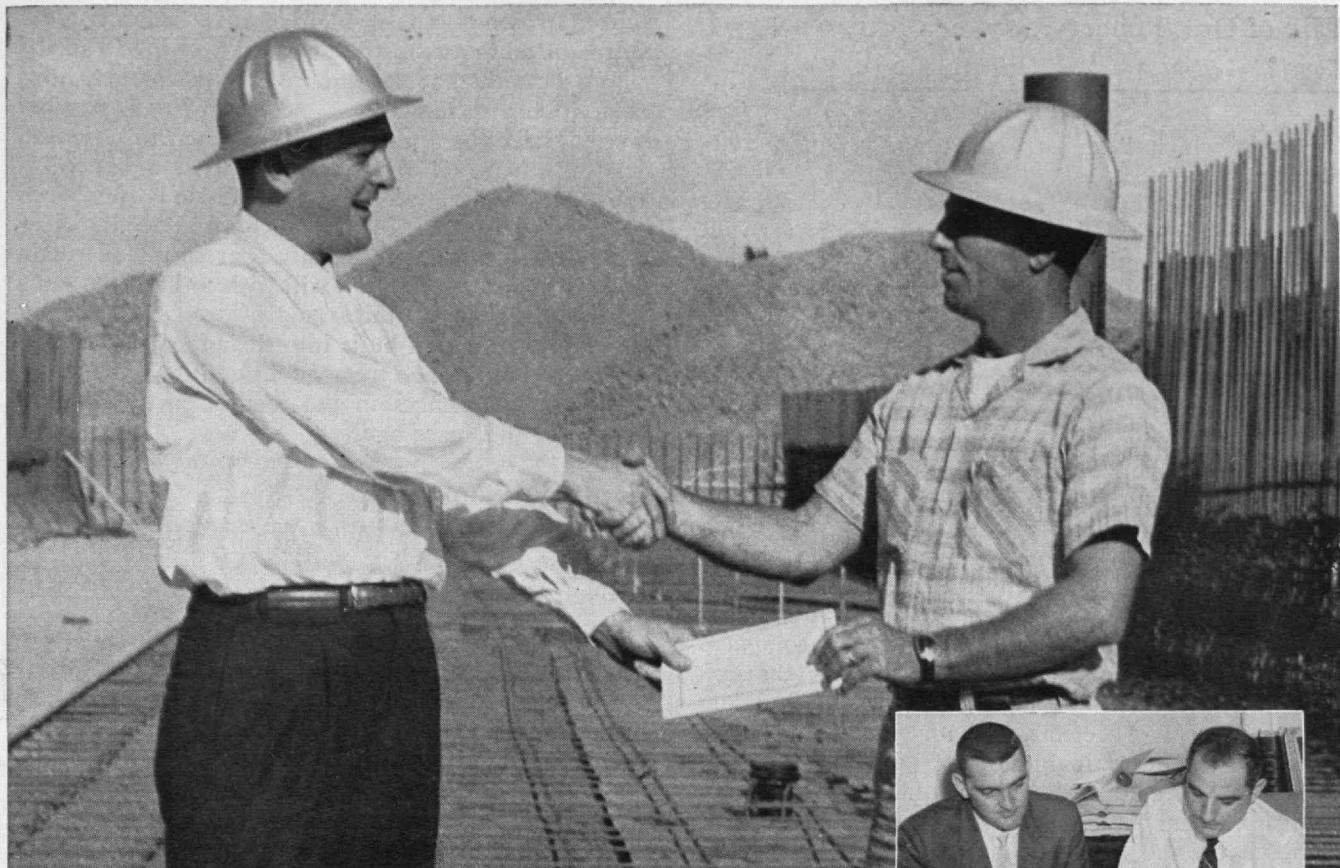
IF WE ASSUME an average man requires approximately 3,000 calories a day with 70 grams of food in the form of protein, 20 per cent of the calories in the form of fat, and the remainder in the form of carbohydrates, we come out with a minimum weight of a purified hypothetical synthetic diet—and certainly one I would not advocate for continued consumption—of 1 pound 7.6 ounces. The average home today takes in about 7 pounds of food for each person per day.

In addition to the 1 pound 7.6 ounces of basic food components, it is necessary to add a small amount of accessory food factors required by man, known as vitamins, flavoring agents, and packaging materials. Man also needs approximately 1.5 pounds of oxygen and 5.5 pounds of water per day. Thus approximately 9 pounds must be supplied for each man each day that he is in space.

For periods of a few days, such as one would consider in traveling to the moon, carrying sufficient liquid oxygen supplies, stored water, and dehydrated foods is certainly no problem. It might be possible, in fact, to carry a supply of dehydrated and concentrated foods for a two-to-six months stay in space, but a supply to last longer than six months would probably exact too great a weight penalty.

Closed-cycle, biological systems for space feeding have been considered and a great deal has been written on the possible uses of chlorella and various species of microorganisms. At present, I do not believe that we have a solution for the long-term feeding of man in space—much more needs to be studied.

*(Concluded on page 50)*



Bill McDonald, New England Life (left) with Nicholas Camblin, President, Camblin Steel Service, Inc., Sacramento, Calif.

Bill discusses contract with Camblin attorney George Paras. The company owners, Mr. & Mrs. Camblin, are enthusiastic about their corporation coverage, and will continue to use Bill's services to meet the needs of their expanding business interests.



## Bill McDonald delivers a policy for \$250,000 after only 8 months of selling life insurance

Bill McDonald had a fine record as an enlisted man and commissioned officer in flight engineering. After his discharge, Bill wanted a career where his initiative would enable him to get ahead fast. A job where his earnings would be directly related to his efforts and ability.

A leading Sacramento employment agency told Bill that life insurance selling — and specifically, life insurance selling with New England Life — would give him the best opportunity to realize his ambitions. He went to our General Agent in Sacramento and was impressed by what this company could do for him. He was especially interested in the training and supervisory support which would quickly prepare him to enter the more challenging areas of estate and business security planning.

Bill has done an outstanding job. This quarter-million dollar policy is representative of the kind of performance

that brought him our Rookie of the Year Award for 1959.

If a career like Bill McDonald's appeals to you, there may be a place for you with New England Life. Men who meet and maintain our requirements get a regular income right from the start and can work practically anywhere in the United States.

For more information, write Vice President John Barker, 501 Boylston Street, Boston 17, Massachusetts.

## NEW ENGLAND

*Mutual* **LIFE** *Insurance Company*  
BOSTON, MASSACHUSETTS

THE COMPANY THAT FOUNDED MUTUAL  
LIFE INSURANCE IN AMERICA — 1835

125th Anniversary of Our Charter

These MIT College men are New England Life representatives:

Arthur C. Kenison, '19, Boston  
Blaylock Atherton, '24, Nashua  
John H. Schafer, '25, Newark

Charles E. Crawford, '31, Phoenix  
Maurice W. Hanks, '38, Newark  
Herbert L. Neitlich, '49, Boston

Ask one of these competent men to tell you about the advantages of insuring in the New England Life

## Talk of Our Times

(Concluded from page 48)

Systems which have been advocated are not 100 per cent efficient. Based on the publications to date, and on the assumptions of utilizing waste materials by unicellular organisms and the reutilization of water following treatment of human waste by ion-exchange resins, I think I should point out with candor that a strong stomach will be one criterion for selecting the first candidate for space travel. Moreover, based on some of the publications to date, I expect that the first man-made bower that houses the closed-cycle ecological system will have its aesthetic limitations and so, too, the space man's algae menu.

To keep a chlorella or any other microbe system going indefinitely without contamination or infection by plant or animal pathogens, and without a severe reduction in output, or convergence of the system, presupposes a biological control rarely found in nature. And even if we are able to produce a compact and operational piece of equipment to grow the organism, chlorella is not food as such, and the human being cannot be expected to live for extended periods of time on an interminable diet of salty, green paste. This has been among the greatest faults of many of the bright ideas for coping with some of the world's problems of nutritional insufficiency.

Tremendous advances have been made in possible foods for the future. These advances in producing dehydrated foods of excellent characteristics and pre-

cooked frozen foods of high quality certainly offer means of taking us to the next stage, or a trip to the moon; beyond that, for interplanetary voyages, however, intensive research is necessary—and possibly even a scientific breakthrough in the life sciences.

I think it is safe to predict that, if we today enjoy, above all else, broiled tenderloin steaks, lobster Newburg, and the like, our grandchildren in the year 2000—whether on our mother spaceship, the earth, or on a lunar expedition—will wish to have the same foods available, with the same degree of convenience, flavor, and nutrition built into their food packages.

There are some tremendously interesting and fascinating challenges in the food science and technology of the space age.

## Control Phenomena

*Lecturing in London under the auspices of the Institution of Mechanical Engineers this winter, John A. Hrones, '34, Vice-president of Case Institute of Technology, said in part:*

MORE AND MORE we are moving into a society where men's efforts are spent in controlling the distribution and utilization of power, and relatively little energy is supplied by man. If the Western world is to maintain a position of influence and to continue its traditional support of individual freedom, talented men must be used to their fullest capacity in situations where judgment, wisdom, and creativity are indispensable. We must, therefore, continue to develop our understanding of control phenomena.

**ASK THE  
AEROFIN MAN**  
for the practical solution  
to your problem of  
**HEAT EXCHANGE**  
in heating, cooling,  
air conditioning or process

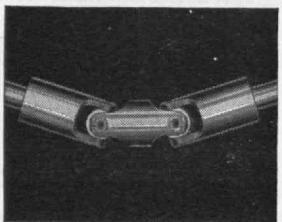
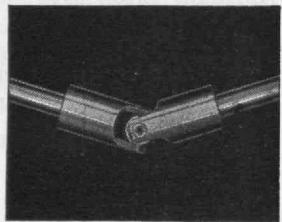
**AEROFIN CORPORATION**  
101 Greenway Ave., Syracuse 3, N.Y.  
Pioneers in Light-Weight, Extended Surface

## How Curtis helped a design engineer "BEAT THE HEAT"

This single universal joint in a ribbon-stripping machine was operated at a 34° angle. The joint heated up, wear was excessive. (Curtis Joints have been tested at angles up to 37°, but we do not recommend angles greater than 30°.)

Curtis engineers recommended a *double* Curtis joint, which reduced the angle to 17° per joint. Result: no overheating, improved efficiency, longer life.

You can depend on Curtis engineering in any problem of angular power transmission. And you can depend on



**CURTIS UNIVERSAL JOINTS** because our catalog torque and load ratings are substantiated by constant tests under production conditions.

14 SIZES ALWAYS IN STOCK  
3/8" to 4" O.D.  
(6" joints on special order)

Not sold through  
distributors. Write direct  
for free engineering  
data and price list.

TRADE  
C  
MARK  
UNIVERSAL JOINT CO., INC.

82 Birnie Avenue, Springfield, Mass.  
As near to you as your telephone

EXCLUSIVELY A MANUFACTURER OF UNIVERSAL JOINTS SINCE 1919

## New Books from the Technology Press

### Fracture

Edited by B. L. Averbach, D. K. Felbeck, G. T. Hahn, and D. A. Thomas

Proceedings of an international conference on the atomic mechanisms of fracture. Papers on cleavage, ductile, fatigue, and high-temperature mechanisms of fracture for metals, ceramics, and polymers, with a chapter on future research needs. \$17.50

### A Chinese Village in Early Communist Transition

### The Chinese Family in the Communist Revolution

By C. K. Yang

Companion volumes examining the effect on Chinese society of the introduction of Communism. The first volume is a case study of the development of a Chinese village, showing the traditional pre-Communist agricultural society, the years of struggle during 1949-51, and the recent adjustments to new social and economic patterns imposed by the Communist regime. (\$6.50) In the second volume, the author examines the revolutionary transformation of the traditional Chinese society through an examination of recent modifications in its structural core, the family. (\$6.00)

### Experiencing Architecture

By Steen Eiler Rasmussen

A translation from the Danish in which the author discusses architecture in such a way that readers outside the architectural field will find interest in the types and characteristics—color, scale and proportion, rhythm, and texture—of the architecture surrounding them. Excellent illustrations are carefully integrated with the text. \$4.50

*Order from the Technology Press  
Cambridge 39, Massachusetts*

ALUMINUM  
PLASTIC  
STEEL  
WROUGHT-IRON  
CEMENT-ASBESTOS  
LIGHTWEIGHT SPEED-LAY PIPE SYSTEM  
FREE BROCHURE

ALBERT  
PIPE SUPPLY CO., INC.  
101 VARICK AVENUE  
BROOKLYN 37, N. Y.  
tel: HYACINTH 7-4900

S.G. ALBERT '29  
A.E. ALBERT '56

# When is a Right a DUTY?

**T**oday everyone enjoys as his birthright, privileges which once were the possession of only a few. But his birthright also includes responsibilities with respect to the privileges he enjoys.

**E**ducation is one of the privileges which carry responsibilities. All of us have the responsibility, for example, of helping to ensure that every young person has the opportunity to complete his education, and of seeing that the quality of instruction at our schools and colleges is maintained at a high level.

**S**un Life Assurance Company of Canada is now offering through newspaper advertising from coast to coast in North America, a series of free booklets on educational matters in which all of us share responsibility. Inquiries should be addressed to: Values in Education, Sun Life of Canada, Montreal.

WHY STAY IN SCHOOL? • SCHOLARSHIPS AND STUDENT LOAN PROGRAMS

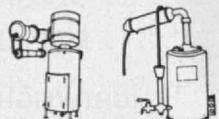
WHAT ABOUT TRADE AND INDUSTRIAL SCHOOLS? • SPORTS TIPS FOR TEENAGERS

WHAT YOU SHOULD KNOW ABOUT SCHOOL BOARDS

# Barnstead pure water specialists since 1878...

## STILLS

In capacities of from  $\frac{1}{2}$  to 1000 g.p.h., for laboratory, commercial and industrial use.



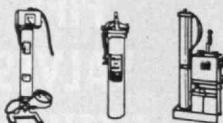
## TRANSISTOR WASHERS



For washing and rinsing transistors, diodes, rectifiers, tube parts, and materials such as Silicon and Germanium.

## DEMINERALIZERS

Mixed-Bed, One-Bed, Two-Bed, and Four-Bed models. Capacities up to 2500 g.p.h.



## BARNSTEAD ULTRA PURE WATER

BARNSTEAD® "MF"® Sub-micron Filter for electronic and nuclear fields. Filters out particles to .000016 inches.



# Barnstead

STILL AND STERILIZER CO.

A. White, '26

T. Hartwell, '28

N. A. Everett, '48

V. C. Smith, '48

2 Lanesville Terrace, Boston 31, Mass.

TRADE MARK REG. U. S. PAT. OFF.

## GEARS

### Made to Your Specifications

You and we can form a team—you to draw up the specifications; we to make the gears—that will be profitable to both of us. Gears of all types, all sizes, all materials. Design-engineering service available.

Custom Gears  
Exclusively

DIEFENDORF GEAR  
CORPORATION

Syracuse 1, N. Y.



**DIEFENDORF**  
GEARS

# Books

**THE TALE OF A MEADOW**, by Henry B. Kane, Alfred A. Knopf. Reviewed by J. J. Rowlands, Editorial Associate of *The Technology Review*.

THOSE who see in a meadow only a field framed by old stone walls will find in this book a new and exciting world of living things.

With the scrupulous regard for accuracy that distinguished his earlier books on wild life, *Wild World Tales*, Mr. Kane, '24, tells the life story of the animals, the birds and the insects that make their home in a meadow. It is filled with the drama of nature, the beginning of life and at times its tragic ending. The telling of the story is enhanced by the natural excitement and curiosity of a boy who learns that in the grass at his feet and in holes beneath old trees, in tunnels under stone walls and in the boughs of the trees above him, creatures make their homes and live, each in its own way, in the endless struggle for survival against enemies and hunger.

It is the boy with roving eyes and keen ears who leads the reader through the meadow and he learns that despite their battle for existence the wild creatures have their share of happiness and contentment. Here is the world of the meadow mouse, the shrew, and the chipmunk, foxes and woodchucks, raccoons and crows and marauding owls, wild bees and butterflies and many others in a setting of trees and plants well known to every country boy.

In this fine book are combined the skills of the author as a writer, photographer, and artist whose extraordinary illustrations are a unique contribution to nature studies for young and old.

**MADE IN NEW YORK**, by Roy B. Helfgott, W. Eric Gustafson, and James M. Hund; Harvard University Press. Reviewed by H. B. Richmond, '14, Former Chairman of the Board, General Radio Company.

THIS is one of a series of studies of the New York Metropolitan Region. Its three authors have selected what they consider typical manufacturing industries in the greater New York City area: Women's and children's apparel, printing and publishing, and electronics. Rapid change seems to be the keynote of all three.

The radio industry's story will have the most appeal for readers of *The Technology Review*. Radio, rather than electronics, is the appropriate term for this industry in the New York area. One reason for its growth there was the manner in which one entered into radio-set manufacturing. It was literally a case of a quick change from the manufacturing of dolls — yes, from Christmas stockings to radios.

In the early days, it was only necessary to hire one engineer to design a set and watch its production. Girls who sewed clothes could be taught easily to do

(Concluded on page 54)



*The Pontiac Bonneville Vista for 1960*

## Pontiac serves you a beauty with perfect form on Wide-Track Wheels

It's no coincidence that so many Pontiac owners are sports-minded.

The love of sports is the love of action. To like the spirit of competition is to like the spirited, that which is game, alive, ready.

Check the physique of this 1960 Pontiac. If this fresh, clean styling doesn't quicken your hankering for the fine sport of owning and driving a great automobile, see your team physician at once.

And when it starts to perform, there's no serious competitor to be found. Wide-Track Wheels give it remarkably steady footwork. It's devoutly obedient to your

coaching, takes your direction instantly, gracefully.

Its power plant — accurately called the Tempest V-8 engine — is resourcefully athletic, with precision timing, crisp take-offs, perennial endurance. There's a whole team of engines for you to choose from — for either high performance or regular-gasoline economy.

Enough of this being on the sidelines of Pontiac enjoyment! See one of our fine dealers this week for some revealingly pleasant practice in a new 1960 Pontiac.

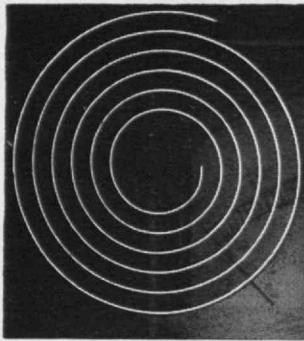
With the widest track of any car, Pontiac's width is on the road — where it gives you better stability. Wide-Track widens the stance, not the car.



# PONTIAC

THE ONLY CAR WITH WIDE-TRACK WHEELS

PONTIAC MOTOR DIVISION • GENERAL MOTORS CORPORATION



### "Precision-Gauged" HAIR SPRINGS

More than 25 years' experience making all types of hair-springs for critical instrument applications. High volume production with absolute uniformity.

PRECISION PRODUCTS COMPANY INC OF WALTHAM  
WALTHAM 54 • • • MASSACHUSETTS

## SYSKA & HENNESSY, INC.

### Engineers

John F. Hennessy '24

John F. Hennessy, Jr. '51



DESIGN • CONSULTATION • REPORTS  
POWER PLANT • WASTE DISPOSAL • WATER SYSTEMS  
New York City

## CHAUNCY HALL SCHOOL

Founded 1828. The School that specializes in the preparation of students for the Massachusetts Institute of Technology.

Ray D. Farnsworth, Principal, 533 Boylston Street, Boston, Mass.

## ALEXANDER KUSKO, INC.

### Consulting Engineers

141 Main Street Cambridge 42, Mass.  
ELiot 4-4015

### Research and Development in

Magnetics  
Electric Machinery  
Instrumentation

Transistor Circuits  
Control Systems  
Power Supplies

A. KUSKO '44  
J. A. GAUDET '56

J. P. BLAKE '54  
G. V. WOODLEY '55  
K. BELLEHU '59

## RELIABILITY CONTROL ENGINEERING

consulting engineers to Contractors of  
Governmental end-use Materiel

### RELIABILITY—

- Program Planning
- Feasibility Studies
- Proposals
- Design Reviews
- Assurance Test Programs
- Reporting & Analysis Systems

### —QUALITY

- Vendor Surveys—
- Procedures—
- Test Facilities—
- Improvement Programs—
- Training Aids—

A. Warsher, '32 RIDGEWOOD, N.J. Gilbert 5-6614

## Books

(Concluded from page 52)

a simple operation in an assembly chain, and most manufacturers purchased their components from specialists. It was quite similar to the manufacture of women's clothes; everything had to be sold by Christmas or dumped.

Before radio-set manufacturing began, many now famous men had gravitated to New York to seek financing. Examples are S. F. B. Morse, Edison, Fessenden, and DeForest.

Today there is still a considerable number of radio manufacturers in New York, but the greatest additions to the wealth of this country come from the research companies such as the American Telephone and Telegraph Company, which moved to New York from Boston in 1907. A very important part of the industry is now devoted to manufacturing technical equipment for our national defense, and a wider circle must be drawn around the city to include some of the very large concerns.

While some cities seem to be standing still, there seems to be a magnet in New York which keeps it ever virile. The three industries covered by this book are well worth studying.

## Technical Volumes

RECENT books likely to be of especial interest to M.I.T. Alumni include:

*Instrumentation in Scientific Research*, by Kurt S. Lion, Associate Professor of Applied Biophysics. This is a reference work dealing with electrical input transducers, published by the McGraw-Hill Book Company, Inc., New York.

*Industrial Complex Analysis and Regional Development*, by Walter Isard, former Director of the Urban and Regional Studies Section at M.I.T. who is now chairman of the Department of Regional Science at the University of Pennsylvania; Eugene W. Schooler, a former research associate at M.I.T. who is now Assistant Professor of Industry at the University of Pennsylvania; and Thomas A. Vietorisz, '48, a former research associate and instructor in Economics at M.I.T. who is now an economist with the United Nations Economic Commission for Latin America. This is a case study of refinery-petrochemical-synthetic fiber complexes and Puerto Rico, published jointly by The Technology Press of M.I.T. and John Wiley & Sons, Inc., New York.

## William H. Coburn & Co.

### INVESTMENT COUNSEL

68 Devonshire Street

Boston

# PROFESSIONAL CARDS

**JACKSON & MORELAND, INC.**  
**JACKSON & MORELAND INTERNATIONAL, INC.**  
*Engineers and Consultants*  
ELECTRICAL—MECHANICAL—STRUCTURAL  
DESIGN AND SUPERVISION OF CONSTRUCTION  
FOR  
UTILITY, INDUSTRIAL AND ATOMIC PROJECTS  
SURVEYS—APPRAISALS—REPORTS  
MACHINE DESIGN—TECHNICAL PUBLICATIONS  
BOSTON WASHINGTON NEW YORK

**EADIE, FREUND & CAMPBELL**  
*CONSULTING ENGINEERS*  
500 FIFTH AVENUE NEW YORK 36, N. Y.  
Mechanical—Electrical—Sanitary  
Air Conditioning—Power—Process Layouts  
James K. Campbell '11

**METCALF & EDDY**  
*Engineers*

Water, Sewage, Drainage, Refuse and  
Industrial Wastes Problems  
Airports, Laboratory, Valuations  
Statler Building, Boston 16, Mass.

**THE KULJIAN CORPORATION**  
*Consultants • Engineers • Constructors*

UTILITY • INDUSTRIAL • CHEMICAL  
Power Plants (Steam, Hydro, Diesel), Textile Plants,  
Water & Sewage Works, Oil Refineries, Pipe Lines,  
Army & Navy Installations, Air Fields, Hangars

H. A. Kuljian '19 A. H. Kuljian '48  
1200 NO. BROAD ST., PHILADELPHIA 21, PA.

**FABRIC RESEARCH LABORATORIES, INC.**

*Research, Development, and Consultation*  
*In the Fields of Fibrous, Organic, and Related Materials*  
1000 Providence Highway Dedham, Mass.  
(At Route 128 and U.S. 1 Interchange)

W. J. HAMBURGER, '21 K. R. Fox, 40 E. R. KASWELL, '39

**GILBERT ASSOCIATES, INC.**

*ENGINEERS AND CONSULTANTS*

Malcolm G. Davis 25, Vice President  
Allen W. Reid '12 E. C. Edgar '35

Steam, Hydro, Diesel, Nuclear Power Plants; Industrial  
Structures; Plant Safety, Utility Rates, Valuations, Reports;  
Purchasing; Chemical Laboratory

New York • READING, PA. • Washington

**LAUREN B. HITCHCOCK ASSOCIATES**  
*Chemical Engineers*

Industrial Research & Development  
Technical & Economic Evaluations  
Acquisitions of Processes and Plants  
Commercial Chemical Development—Air Pollution Control  
Lauren B. Hitchcock '20 Technical Advisor, John H. Schaefer '26  
60 East 42nd Street ..... New York 17, N. Y.

**FAY, SPOFFORD & THORNDIKE, INC.**  
*Engineers*

Airports, Bridges, Express Highways  
Water Supply, Sewerage and Drainage Systems  
Port and Terminal Works  
Industrial Plants Incinerators  
Designs Investigations  
Supervision of Construction

11 Beacon Street Boston, Massachusetts

**CLEVERDON, VARNEY & PIKE**  
*Consulting Engineers*

HERBERT S. CLEVERDON '10  
JOHN A. DOW '23

WALDO F. PIKE '15  
HAROLD E. PROCTOR '17

Structural Designs Foundations  
Heating, Ventilating, Electric and Plumbing De-  
signs, Industrial Buildings, Reports, Investigations

120 TREMONT STREET BOSTON 8, MASS.

**MAURICE A. REIDY**  
*Consulting Engineer*

BRIDGES BUILDINGS  
STRUCTURAL DESIGNS FOUNDATIONS  
CONSTRUCTION CONSULTANT AND ARCHITECTURAL ENGINEER

*Estimates and Appraisals*

101 TREMONT STREET BOSTON, MASS.

**CHARLES NELSON DEBES ASSOCIATES, INC.**  
*ENGINEERS AND ARCHITECTS*

Structural, Electrical, Mechanical, Acoustical  
Industrial, Commercial and Municipal Projects

915 EAST STATE ST. ROCKFORD, ILL.  
C. N. DEBES '35

**MORAN, PROCTOR, MUESER & RUTLEDGE**  
*CONSULTING ENGINEERS*

Foundations for Buildings, Bridges and Dams;  
Tunnels, Bulkheads, Marine Structures, Soil Studies and  
Tests; Reports, Design and Supervision

WILLIAM H. MUESER '22 PHILIP C. RUTLEDGE '33  
415 Madison Ave., New York 17, N. Y.

**BREWER ENGINEERING LABORATORIES**  
*Consulting Engineers*

Electric Strain Gage Testing • Stress Analysis  
Strain Gage Amplifiers • Strain Gage Switches  
High Temperature Strain Gages

MARION, MASS. TEL. 103  
G. A. Brewer '38

**CAPITOL ENGINEERING CORPORATION**  
*CONSULTING ENGINEERS*

DILLSBURG, PENNSYLVANIA

Highways Reports  
Airports Surveys  
Water Supply Design  
Sewage Treatment Soil Testing  
Bridges

Branch Offices  
Rochester, N. Y. Saigon, Vietnam  
Robert E. Smith '41, Vice President



*and the prophet replied:*

*"It is well to give when asked, but it is better to give unasked, through understanding."\**

## *Gifts by Will*

TO THE

### Massachusetts Institute of Technology

The tale is told of Almustafa, the prophet, who, having awaited for many years the ship that would return him to the place from whence he came, was making the final descent to the shore when the folk of Orphalese crowded about him. They besought him before departing to "disclose us to ourselves, and tell us all that has been shown you of that which is between birth and death."

With words of wisdom, an answer appropriate was given to the woman holding a baby, to the ploughman, to the merchant. Begged one, "Speak to us of GIVING," and the prophet replied:

"It is well to give when asked, but it is better to give unasked, through understanding;

And to the open-handed the search for one who shall receive is joy greater than giving. All you have shall some day be given;

Therefore give now, that the season of giving may be yours and not your inheritors."

Through the years the prophet's words have held true, for even today he who "through understanding" includes the MASSACHUSETTS INSTITUTE OF TECHNOLOGY as a beneficiary in his will can experience thereby a two-fold satisfaction. The successful culmination of his search for a worthy recipient and the anticipated results his generosity will assist in accomplishing. These satisfactions give an added value to the span of man's days and project his usefulness to his fellowmen far into the future.

The Massachusetts Institute of Technology because of the high quality of the education given its students, its effective research work for aiding America in peace as well as in war, and the high character of its governing body and academic staff qualifies as an institution for serving our American ideals for the present and in the years to come.

But the search, the finding, and the anticipated accomplishments are not enough; for without the properly-worded record, man's plans for the future may go awry. Hence the prophet's importuning, "—give now," should be heeded. The giving need not be an immediate physical transaction, for written directions replace the spoken word when the speaker is no longer present, and a donor can frequently make by will a gift which is larger than he can make while living. Truly, "*it is well to give when asked, but it is better to give unasked, through understanding.*"

A booklet "Gifts by Will," outlining different forms of bequests to M.I.T., is available to you or to your attorney by writing to:

Director of Development

Massachusetts Institute of Technology

Cambridge 39,

Massachusetts

\* "The Prophet" by Kahlil Gibran

# Club Notes

## Record Cleveland Crowd Greets Dr. and Mrs. Stratton

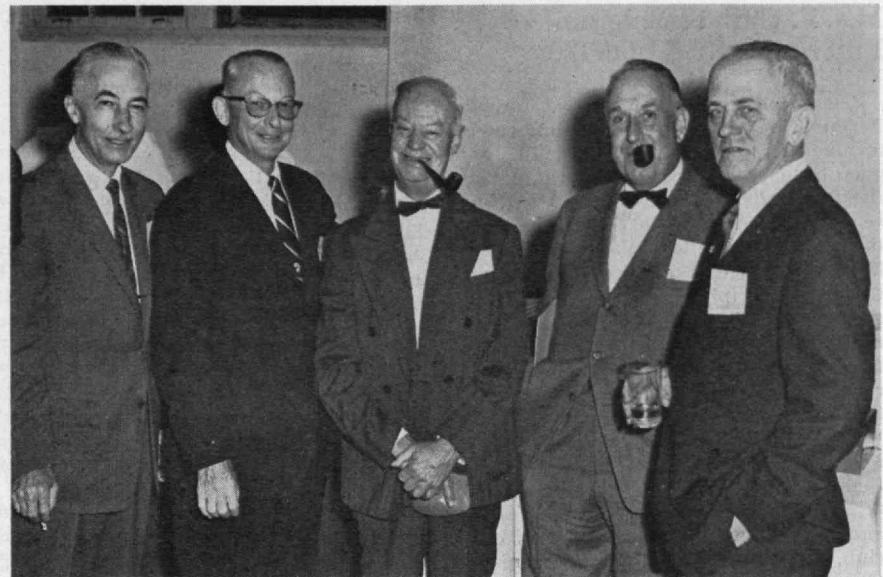
One hundred and fifty Cleveland and Akron Alumni with wives were on hand November 19 to welcome Dr. and Mrs. Julius A. Stratton '23. The dinner meeting was highlighted by Dr. Stratton's talk on present and future plans at the Institute. We would like to thank the Strattons for being our guests and also the Alumni of Cleveland and Akron for helping make the November meeting the largest and most enjoyable one in many years.

December 30 marked our annual Christmas luncheon for M.I.T. students and Faculty, home for the holidays. For the first time this year we also included dads of students. Over 60 people attended, making this the best gathering yet.

Two more meetings are scheduled for the 1959-1960 year, one in late February and the second in May. Programs for these meetings will be announced shortly. —HEATH OLIVER '55, *Secretary*, 1133 West 9th Street, Cleveland 13, Ohio.

## Silver Stein Dinner Dance Held in New York City Club

The club is in high gear now, and on December 2 we held the Silver Stein Dinner Dance, in the Grand Ballroom of the Hotel Biltmore. (The club's quarters are in the Biltmore, right across from Grand Central Station.) The affair, jointly sponsored by the M.I.T. Clubs of New York and Northern New Jersey, was chairmanned by C. George Dandrow '22, who did a sterling job of master-minding and



Present at the Cleveland dinner meeting were (left to right) S. Floyd Stewart '24, Charles H. Reed '20, Morse W. Rew '09, A. Ilsley Bradley '21, and Orr N. Stewart '23.

organizing the meeting. The Silver Stein was awarded to Alfred T. Glassett '20, whose name is now entered on the roll with six other distinguished previous recipients of the award: Lester D. Gardner '98, Thomas C. Desmond '09, Gerard Swope '95, Alfred P. Sloan '95, C. George Dandrow '22 and Thomas D'A. Brophy '16.

Messrs. Dandrow and Glassett guided the audience of approximately 300 through several past, stirring decades of the M.I.T. Club of New York's history, and President J. A. Stratton '23, led the, by this time, inspired listeners on a tour of the Institute's future, highlighting the importance of technology, including the significance of the earth sciences and living sciences, and relating the role of mathematical disciplines to these two fields of knowledge. Several other representatives from the Institute were present, including the Logarithms — undergradu-

ate harmonizers — and a number of the staff of the Alumni Association: H. E. Lobdell '17, D. P. Severance '38, F. G. Lehmann '51 and D. F. G. Haven '52.

Our second technical seminar of the 1959-1960 season was held on December 10 at the Biltmore, under the energetic chairmanship of G. M. Garbarino '33. "Atomic Waste Disposal," a topic of growing national and international concern, was discussed by Professor Rolf Eliassen '32, who had recently returned from a meeting in Monaco sponsored jointly by the International Atomic Energy Organization and UNESCO.

About February 20, the club will hold its annual technical dinner meeting. Based on attendance in recent years, it should receive an excellent turnout.

On March 15, the Westchester section will hold its mid-year dinner meeting at the Scarsdale Country Club.

About March 15, the Long Island section will hold its annual meeting to be followed in April by the club's main annual meeting, attended by both Long Island and Westchester sections.

Monthly class luncheons are growing steadily and have become established as a popular club activity. Setting an example as class luncheon sponsor is Nathan Schooler '24, who works out on Long Island and attracts regular attendance from his classmates located as far away as California. Also the classes of the Fifties are showing more activity in class luncheons under the leadership of E. J. Marchetti '51, who recently was appointed to co-ordinate the classes from 1950 to 1959. Further details of class luncheons and other club activities appear in the membership directory which is being mailed out in January to all paid-up members. Consult your directory for information; or if your questions go beyond its more than 90-page scope, call or write the club, c/o the Biltmore Hotel, Madison Avenue and 43rd Street, New York 17, N.Y. (Telephone OREGON 9-5654). —JAMES M. MARGOLIS '52, *Secretary*, 218 Richbell Road, Mamaroneck, N.Y.



Enjoying the Cleveland dinner meeting were H. Arthur Zimmerman '37 and Mrs. Zimmerman. Nearby were Dr. Stratton '23, G. E. Barnes '23, and J. A. Hrones '34.

## M.I.T. Club of Belgium Entertains Mr. Lobdell

The members of the M.I.T. Club of Belgium, organized in 1951, had the good fortune of receiving H. E. Lobdell '17, as guest of honor at their dinner held at the *Cercle Royal Gaulois* in Bruxelles on November 23. After a 4000-mile journey through not too serious places in Europe, Mr. Lobdell had a real need of some of the M.I.T. discipline which he received at the dinner. The Belgian Alumni hope that they succeeded in sending the Executive Vice-president of the Alumni Association back to the States in really good form and ready for serious duties.

The Alumni attending the dinner thank Mr. Lobdell for having given them a chance to learn more about the recent achievements of their dear Institute. They also wish to thank the president of our club, Paul Heymans '23, who organized this dinner and entertained Mr. Lobdell while in Belgium, but who at the last minute, unfortunately, was prevented by his doctor (not an M.I.T. Alumnus) from joining in the festivities.

The Alumni present at the dinner were: Charles L. Manneback '21, Mrs. Antoinette Tricot '23, Eugène D'Hooghe '24, Joseph E. Goossens '25, William J. Heymans '27, Paul R. de Permentier '28, René M. Stinglhamber '37, Dumont Rush '43, Samuel M. Moore, 3d '45, Richard T. Gregg '47, Ferdinand E. E. Dierkens '48, Pol G. Boel '49, Denis M. Schmitz '49, James M. Peters '53, Paul E. R. Willems '53, Thierry de Menten de Horne '54, Francis C. Van Hecke '54, Bruno F. Mattlet '55, Walter J. Carpentier '56, Charles V. Dehon '56;

E. J. Nève de Mevergnies '56, Claude J. A. Deschamps '56, Hubert G. Heymans '56, Marcel A. M. J. Huberlan '56, Michel U. Willems '56, Michel P. Hosdain '57, Adolphe A. A. Malevez '57, Emile L. J. Gevenois '58, Michel H. A. Theys '58, Bernard J. Van Ommeslaghe '58, and Simon Goldstein '59. — RENÉ M. STINGLHAMBER '37, *Secretary*, 5 Ave. du Herisson, Uccle, Bruxelles.

## Northern Texas Club Holds Dinner Meeting

M.I.T. Alumni from the Dallas area joined with the Fort Worth Club for their annual joint Christmas get-together on December 14. A cocktail party was held, preceding the dinner, in the new Club Southwest overlooking the attractive pool and garden, and this was followed by a delicious sauerbraten and potato pancake dinner in the Crossroads Restaurant.

Following dinner, the group heard two outstanding speakers on the subject of current trends in education. The first was Dr. Camille Dupleix, who was introduced as being from the Sorbonne in Paris. Dr. Dupleix presented his observations on educational problems in the United States from the viewpoint of a European. After some complimentary introductory remarks, it became apparent from Dr. Dupleix's speech that he had formed a very derogatory opinion of things in the United States in general, and Texas in particular. Just when some of the mem-

bers were ready to come to blows over these remarks, it turned out that Dr. Dupleix, although genuinely from France, was actually the very jovial manager of the Club Southwest.

Our main speaker was Dr. W. H. Nedderman, the new dean of engineering at Arlington State College, who discussed "The Outlook for Technical and Scientific Education in the Dallas-Fort Worth Area." Dr. Nedderman gave us a timely account of the very rapid progress being made in technical education in this region, and particularly at Arlington State College.

Attending the meeting from Dallas were the following: Mr. and Mrs. Lin Adams '42, Mr. and Mrs. Ed Bell '48, Ben Biderman '55, Mr. and Mrs. Sinclair Buckstaff '52, Mr. and Mrs. Max Daggett '46, Irwin Grossman '52, Mr. and Mrs. Chester Haig '40, Mr. and Mrs. Bob Harrison '47, Mr. and Mrs. D. Bryce King '48, Roy L. Klein '46, Mr. and Mrs. F. H. Lahee '18, Mr. and Mrs. Bob Lichten '43, Mr. and Mrs. Howard Marx '48, Clif Moss '48, Mr. and Mrs. Jon Noyes '12, Mr. and Mrs. Ed C. Rees '35, and Mr. and Mrs. John P. Young '52. — ROBERT L. LICHTEN '43, *Secretary-Treasurer*, 6338 Aberdeen Avenue, Dallas 30, Texas.

## Chicago Club Hears About World Tensions

On Wednesday, November 18, 38 members of the M.I.T. Club of Chicago and their guests had a dinner meeting, arranged by Jack Page '48, at the Real Estate Board in Chicago. Professor William McGovern of Northwestern University was guest speaker and discussed "World Tensions Existing Today." After a pleasant social hour and a fine meal, Harlan Davis '40, President of the M.I.T. Club of Chicago, introduced Professor McGovern, who among other things, at one time in his career disguised himself as a Tibetan and became the first white man to enter that country. He also was an advisor, during World War II, to the Joint Chiefs of Staff and presently has a regular lectureship at the Army, Navy, and Air Force war colleges.

Professor McGovern estimated that the chances were nine to one against actual fighting breaking out over Berlin and that the chances against such an occurrence over Formosa were seven to one. However, he noted that the chances were considerably greater in the Near East and in southeast Asia. The possibility of another war was greatest, he thought, in southeast Asia because of its petroleum. China's requirements of raw materials are real, he said, and are similar to the requirements Japan had in 1942 — China lacking iron ore, petroleum products, bauxite, chrome, and manganese, all of which are available in southeast Asia. The Chinese, he added, feel that they have superior forces, as a result of their success in fighting the United Nations to a standstill in Korea.

The meeting broke up after a short question-and-answer period. Among those attending were: L. Pirola '26, J. O'Meara '48, H. Martin '33, W. Krampert '51, F. C. Smith '43, W. Burger '27, P. Kimberlin '30, J. Herlihy '39, I. Thrasher '27, E. Kratovil

'48, M. Baxter '50, B. Humphreville '26, J. Ferral '17, W. Shepard '20, J. Bowers, Jr. '57, W. Frisbie '24, E. Seifert '19, W. Murphy '39, D. Matheny '50, V. Haensel '37, H. Bartholomay '40, S. Smetters '96, C. Dunn '15. — ROBERT L. SILBERMAN '48, *Secretary*, Ekco Engineering Company, 1949 North Cicero Avenue, Chicago, Ill.

## Cincinnati Club Hears Kay Speak on Atomic Age

The M.I.T. Club of Cincinnati held a dinner meeting for members and their guests at the Wigwam Restaurant on November 19. After an extended cocktail hour, dinner was served and the meeting begun. Treasurer Sam Crew '34 reminded everyone present that annual dues of \$2 were payable to him and that the club assets are in a rather anemic condition. Any Alumnus who has not yet paid his dues may send \$2 to: Sam Crew, Crew Builders Supply Company, 2120 Madison Avenue, Norwood, Ohio.

The speaker for the evening was Dr. Robert Kay whose subject was the "Expanding Atomic Vista." Dr. Kay, who is with the aircraft nuclear propulsion department of General Electric Company, discussed the changes which atomic energy is making in our lives, the significance of some of the recent developments, and what could be expected in the next few years. He also discussed some of the controversial figures such as Admiral Rickover and Dr. Oppenheimer with whom he has worked. Dr. Kay has the fortunate ability to reduce a complex topic to terms easily understood by laymen.

Those who attended were: Jay Berlove '53; Samuel Schmidt '11, and his daughter, Mrs. Sivitz; Larry Nisbet '54; Bob Summerville '52; Jean and Don West '55; Paula and George Michel '53; Verinda Nath Chaudhry (from India); Mr. and Mrs. Frank Rickers '22; Ed Hair '54; Dr. and Mrs. Gerhard Reethof '47; Mr. and Mrs. Bernard Reckseit '43; Mr. and Mrs. Edward Fox '50; Mr. and Mrs. Edward Kruckemeyer '11; Mr. and Mrs. Charles Seifert '48; Sam Crew '34 and his guest Miss Elayne Webb; Mr. and Mrs. Norman Gordon '43; Mr. and Mrs. Alfred Kullman '25; Marshall Barker; John Andrews '59; and J. W. Taylor '05. — JAMES STOLLEY '52, *Secretary*, 11 Beverly Drive, Hamilton, Ohio.

## Association of Japan Welcomes Krim

The M.I.T. Association of Japan held its first fall meeting November 13, 1959. We had an unusually large gathering of 35 members and their wives. Norman B. Krim '34, Vice-president of the Raytheon Manufacturing Company, was welcomed as our special guest. Mr. Krim told us about the latest developments at M.I.T. and also spoke about his company, from its founding to the present.

In mid-January we are expecting a visit from Mr. and Mrs. William E. Barbour '33. We are all looking forward to meeting the distinguished visitors from the States. — SHIKAO IKEHARA '28, *President*, 22-1 Shizu-Cho, Meguro-ku, Tokyo, Japan.

## Professor Whitman Scores In Syracuse Address

The M.I.T. Club of Central New York met November 19, 1959, at the Onondaga Country Club to hear Professor Walt Whitman'17, speak on "Atoms and Peace." Our distinguished visitor with this timely topic was responsible for a highly successful dinner meeting attended by 43 Alumni, wives, and guests.

Alumni and guests present included: Bernie Chertow'48, and Mrs. Chertow, Joe Copp'39 and Mrs. Copp, Bob Roberts'17 and Mrs. Roberts, Dewey Sandell'49 and Mrs. Sandell, John Holton'17 and Mrs. Holton, Darwin Traver'45 and Mrs. Traver, Art Phillips'47, Paul Lanning'53 and Mrs. Lanning, Jim McNitt'41 and Mrs. McNitt, Charles Stockdale'52 and Mrs. Stockdale, Joe Bongiavanni'48 and Mrs. Bongiavanni, Ed Moyer'44 and Mrs. Moyer, John Marsland'57 and Mrs. Marsland, Dan Macero'51, Bob Holton'57 and Mrs. Holton, Joe Owens'40 and Mrs. Owens, Al Aksoy'40 and Mrs. Aksoy, Ed Gruppe'22 and Mrs. Gruppe, Greg Gebert'50 and Mrs. Gebert, Eugene Drucker'49, Ken Phillips'50, Fred Henrickson'40, and Dr. Sacks of Syracuse University.

It is with pride that the M.I.T. Club of Central New York would like to point out that it is situated in Syracuse, home of the nation's number one football team, not Schenectady as mentioned in the November Review.—CHARLES L. STOCKDALE'52, *Secretary*, 118 Haverhill Dr., Dewitt, N.Y.

## David Shepard Speaker At Northern N.J. Club

Mr. David A. Shepard'26, Executive Vice-president of Standard Oil Company (New Jersey) was the guest speaker at the winter meeting on December 10 at the Hotel Suburban, East Orange. Mr. Shepard discussed the Middle East, with which he had an intimate knowledge, due to many years in foreign operations. Not only were his colorful slides and his presentation of petroleum economics well received by an unusually large audience, but the question and answer period extended over an hour. Mr. Shepard emphasized the intense feeling of nationalism prevalent in these countries and covered the varying degrees of constructive utilization of petroleum income by their governments. Mr. Henry McGrath'36, a member of the program committee, introduced the speaker. Other members of this committee are Rudolph J. Ozol'36, chairman, and Harold A. Ricards, Jr.'41.

The club co-sponsored with the New York club the Silver Stein Dinner Dance, held December 2 in New York City, at which President Stratton spoke. Clayton D. Grover'22 handled liaison with the New York club for this meeting.

Winthrop A. Johns'37, chairman of the attendance committee, on which Philip J. Byrne, Jr.'20, also serves, distributed a 17 by 11 inch geographical car-pool chart showing the location of the club members' towns in order to facilitate car pools for the meetings.—JAMES J. SHYNE'43, *Secretary*, 21 Small Avenue, Caldwell, N.J.; HOWARD E. MILIUS'38, *Assistant Secretary*, 9 Tuxedo Place, Cranford, N.J.

## Atlanta Club Host To the Bush-Browns

Professor Bush-Brown and his wife were the guests of honor at the December meeting of the Atlanta Alumni Association of M.I.T. Professor Bush-Brown favored the meeting with a most able and informative talk on the problems of interesting qualified students in architecture. He illustrated his points with beautiful slides showing the major architectural achievements of the past and present.

Both club President Fred Dickerman and Professor Bush-Brown reported on the local student council contacts. Atlanta high school students' interest in M.I.T. is increasing, but it is still not as high as would be desirable.

Alumni and wives attending the meeting were: Messrs. and Mesdames Benjamin J. Dasher'52, Roger Allen'27, Earle Blount'28, William E. Mitchell'03, James R. Stevenson'50, Elmer E. Sanborn'22, John D. Turci'50, William M. Postman'39, Abner A. Towers'39, Demetrios A. Polychrone'47, Cecil Alexander'43, Fred N. Dickerman'30, and William T. Shuler'38. Mr. William Finch, prominent Atlanta architect, and Mr. Stanley Steinberg of the Georgia Institute of Technology School of Architecture were the guests of Mr. Alexander, and Mr. Polychrone, respectively.—WILLIAM T. SCHULER'38, *Secretary*, 4423 Mount Paran Parkway, N.W., Atlanta, Ga.

## Fairfield Club Listens To Speech on Investments

The M.I.T. Club of Fairfield County held its fall dinner meeting at the Clambox in Westport, Conn., on Thursday October 22. The guest speaker for this occasion was Bruce E. Beagley of Merrill, Lynch, Pierce, Fenner, and Smith, who spoke on "How to Invest."

Among those who attended were: Richard C. Babis'40, Albert E. Bowen'48, George A. Bradley'52, James R. Braxton'46, Fred A. Brooks'55, William P. Cadojan'41, Charles T. Chadwick'51, J. Barton Chapman'35, Thomas F. Comparato'56,

## Deceased

ARTHUR M. WORTHINGTON'92, November 11, 1959\*

EDWARD B. MAY'95, September 14, 1959\*

IDA M. CURTIS'96, January 28, 1959\*

JOHN S. BLEECKER'98, December, 1959

C. GARDNER BARRY'99, November 26, 1959\*

EDWARD HERBERT'00, October 28, 1959\*

FRANK S. FARNHAM'04, October 15, 1959\*

FRANK S. ELLIOTT'05, October 11, 1959\*

PAUL A. MONTANUS'05, April 21, 1959\*

RALPH H. NESMITH'05, October 22, 1959\*

VICTOR H. PAQUET'05, September, 1959\*

RALPH E. GAGE'10, December 8, 1959\*

EDWARD C. TOLMAN'11, November 19, 1959\*

MALCOLM W. LEONARD'13, October 12, 1959\*

DANA H. N. MAYO'14, November 11, 1959\*

HERBERT O. MAXWELL'15, August 24, 1959\*

GILBERT H. GAUS'16, December 9, 1959\*

JOSEPH V. MEIGS'16, October 30, 1959\*

ARTHUR M. MILLER'17, October 26, 1959\*

Elmer W. Crouthers'55, T. Bailey Curran '29, F. Eugene Davis'55, Lloyd Dolge'29, Marc G. Dreyfus'50, C. Philip Epifano'39, Ferdinand F. Ferry'37, Horace S. Ford'31, Paul Gadebusch'49, Robert W. Gaines'39, Alfred J. Gallucci'51, Leonard F. Glancy '44, Frederick W. Green'32, Randall Goff '51, Elmer W. Harmon'30, Raymond D. Harper'41, T. Stewart Harris'40, Emerson P. Hempstead'34, Michael Kundrath'31, Richard A. Lobban'32, Prentiss Lobdell '33, Harry R. McCue'52, Elwood L. McGee '41, David F. McGrath'26, Hamilton Merrill'12, Gilbert C. Mott'37, Bernard N. Nowitz'55, Horst H. Orbanowski'31, Roy W. Roth'50, Anthony R. Savina'30, Joseph B. Scheller'54, Edward W. Smith'42, Clinton H. Springer'45, Reginald B. Stoops'48, David J. Sullivan'24, Harold M. Tepper '52, Oswald Stewart'39, Donald W. Waterman'39, George R. Weppler'37, Edward L. Wemple'34, Charles A. Wesley'34, J. Bryant Williams'47, Carlton E. Vanderwarker'30, Danilo Zucol'58. —ELMER W. CROUTHERS'55, *Secretary*, 152 Norman Circle, Stamford, Conn.

## Norway Club Holds Charter Meeting

Seventeen Alumni were present at the M.I.T. Club of Norway charter meeting held Wednesday, November 18, 1959. The reorganization of the club was greeted with great interest and the response of Tech men from all over Norway was extremely enthusiastic. It seems certain that the membership of the club will increase substantially above the present 17 members. There are about 120 M.I.T. men living in Norway.

The following officers were elected to head the club: Ove Collett, Jr.'49, as President; Egil Arneberg'52, as Vice-president; Andreas Wessell, Jr.'52, as Secretary-Treasurer; and Jakob Roll'50 as Member at Large. Also Harald C. Bjerke'49 was chosen to audit the books, and four committees were established headed by Harald Bjerke'23, and Niels Lassen'23.—ANDREAS WESSEL, JR.'52, *Secretary-Treasurer*, Firma Weswitco, Olaf Schous vei 4, Oslo, Norway.

EDITH CLARKE'19, no date given\*

GEORGE BLISS'20, September 29, 1959\*

EDWARD L. COCHRANE'20, November 14, 1959\*

FRANCIS B. CULBERTSON'20, August 24, 1959\*

CARL L. FLORY'22, June, 1959\*

RANDALL J. HOGAN'22, November 21, 1959\*

PHILIP C. STEVENS'22, October 17, 1959\*

NELSON W. BURTT'23, September 4, 1959\*

ROBERT WALDO FOX'23, October 16, 1959\*

JEAN LEPICIER'23, November 11, 1959\*

ROBERT W. MOIR'26, October 22, 1959\*

GERALD B. YUDKIN'27, November 20, 1959\*

GEORGE P. W. BLACK'28, December 12, 1959\*

JAMES G. MUIR'30, April 24, 1959\*

ARTHUR WOLF'33, May 19, 1959\*

MARVIN J. SILBERMAN'34, October 30, 1959\*

DANIEL W. BURNS'36, November 19, 1959

OTTO H. HARDACRE'36, October 24, 1959

RICHARD H. MILLER'48, September, 1959

\*Further information in Class Notes.

# Class Notes

'91

Here is part of a letter from Harry Cole in North Pembroke, Mass., received November 24: "I had hoped to make my fall trip to Williamstown and see you on the way, but decided to give it up. Very glad to get your letter and learn that everything is right with you."

Since coming to Hastings to spend the winter with my daughter, I have had a nice visit with Sylvan Stix. He has given up his frequent business trips to New York City and now spends his time at his ample and beautiful estate on the Hudson River. His devoted daughter takes wonderful care of him. He has a keen and discriminating interest in M.I.T. affairs, and especially in the Class of 1891. He is a dear and fine old gentleman of whom the rest of us have reason to be proud.

From Bradford Choates of San Mateo, Calif., comes this courageous letter: "On September 1, I returned from the hospital after two operations. I came home a new man, all healed and getting my strength back. Rose held up wonderfully; she has a lot of fortitude, but is worn out. I can now help her. My driver's license expired August 28, so I sold my car and now use taxis or walk. I never knew I had so many friends. The past is gone but there was some good in it, and joy in keeping some principles and my dignity . . ."

And here is one from Lin Damon — what a prince he is! "I am most pleased to hear from you and that you are feeling well. Glad you were able to call on Sylvan Stix. I would like to visit him, on my next trip to New York, though I think he would probably not remember me. I am sorry to think of the passing of Joe Warren and that he will not be with us at the next reunion. I've enjoyed talking with him during our recent meetings. Am making a note that Bradford Choates resides in San Mateo — which is not far from my daughter's home, where I plan to go in the spring. Would like to meet Brad again. His father, Judge Rufus Choate, was one of our revered citizens in his day. I hope your summer passed pleasantly. I had hoped to get to Littleton, but it did not work out. How fortunate that you have your daughter to 'help you on your way.' Please extend my best wishes to her and I hope that we may meet again." — WILLIAM CHANNING BROWN, Secretary, 15 Forest Avenue, Hastings-on-Hudson, N.Y.

'92

It is the sad duty of the secretary to report the death of another of our classmates, Dr. Arthur Worthington, who graduated with us in Course VII. The sec-

retary is indebted to the Dedham *Transcript* for the following account of his career:

"Dr. Arthur Morton Worthington, 89, a practicing physician in Dedham for 61 years, died November 11. He was born March 30, 1870, the son of Erastus and Elizabeth Foster (Briggs) Worthington. He graduated from Dedham High School in 1887, English High in 1888, Massachusetts Institute of Technology, 1892, and Harvard Medical School, 1896, with an M.D. degree (cum laude). He was medical house officer at the Boston City Hospital, 1896-1898. On October 8, 1902, he married Louise Taft Marsh, and they had two children, Arthur Morton, Jr., and Alice Louise, wife of Dr. Stanley Kimball.

"Dr. Worthington began general practice in Dedham in 1898, and was still receiving patients up to the time of his death. He was assistant in bacteriology at Harvard, 1905-1912; bacteriologist in the Dedham Health Department, 1911-1940; and secretary from 1923 to 1940. The doctor was a captain in the U.S. Medical Corps, serving with the A.E.F. in France and Germany from 1918-1919. He was a member of the American Medical Association and Massachusetts Medical Society, the Masonic Fraternity, and the American Legion. He was also a member of the Dedham Historical Society, and its president from 1940 to 1956. At the time of his death he was president-emeritus. In 1936 he was chairman of the Dedham Tercentenary Committee.

"Dr. Worthington was a member of St. Paul's Episcopal Church, Dedham; a vestryman from 1900 to 1938, and author of the 'History of St. Paul's Church.' He made his home at 34 School Street. Be-

\*\*\*\*\*

## Happy Birthday

Among the Alumni of M.I.T. now there are 84 nonagenarians and 784 octogenarians. Birthday greetings are in order during February to four who are due to become 90, to three and fourteen who are due, respectively, to celebrate their 85th and 80th, as listed below with dates of birth:

February, 1870—RICHARD H. MANSFIELD '92, on the 1st; GEORGE M. WARNER '91, on the 3rd; R. GERMAIN HUBBY '94, on the 21st; and CHARLES H. URBAN '91, on the 27th.

February, 1875—GEORGE L. MITCHELL '01, on the 6th; GEORGE R. WADLEIGH '97, on the 11th; and MARK E. TAYLOR '98, on the 17th.

February, 1880—WILLIAM H. EAGER '04, on the 2nd; KATSUZO TSURUTA '05, on the 5th; ROBERT PALMER '04, on the 8th.

MISS C. LILLIAN GLEASON '03, on the 10th; DANIEL M. LUEHRS '06, on the 12th; WILLIAM C. LOUNSBURY '03, on the 13th.

RUSSELL B. LOWE '02, on the 14th; WILLIAM T. ALDRICH '01, on the 16th; CHARLES BOYDEN '05, on the 19th; WILLIAM P. BENTLEY '04, on the 22nd; FRANK S. BRADLEY '03, on the 23rd; both SAMUEL E. ARMSTRONG '04, and HARRY A. PUTNAM '01, on the 26th; and CHARLES W. KELLOGG '02, on the 27th.

\*\*\*\*\*

sides his two children, he leaves seven grandchildren, Richard, Robert, Louise, and David Worthington, and Caroline, Charles and Alice Louise Kimball. — CHARLES E. FULLER, Secretary, P. O. Box 144, Wellesley, Mass.

'95

There are only a few more months to go before it will be time for our 65th reunion which we can have in Boston on or about June 15, M.I.T.'s Alumni Day, if you desire. There is still time to adopt any idea you may have, so drop a line to your secretary.

We have some information about George A. Cutter of 215 Village Avenue, Dedham, Mass. George resigned his job as President of the Thomson Electric Welder Company on his 70th birthday. He has been an officer and director of the company since 1916. He is incapacitated with pains left by shingles, but is making himself as comfortable as possible in a well staffed house he built 20 years ago, next door to the house he owned and occupied till 1947.

The *Newport, R.I., News* ran the following article, September 15, 1959: "Edward Benjamin May, 85, died last night at Newport Hospital. He was born in Roxbury, Mass., November 9, 1873, attended M.I.T., and he studied at the Sloyd Normal School in Nass, Sweden. He taught for five years in the Tyler School in Providence before coming to Newport in 1900. Mr. May taught at Townsend Industrial School, and retired in 1942.

"He was a past master and 50-year member of St. Paul's Lodge of Masons, a life member of De Blois Council and a member of the Washington Commandery, Knights Templar. He leaves his wife, Mrs. Grace Wheeler May; a daughter, Miss Virginia May; a son, Captain Benjamin May II, USN, (retired); a grandson; and a sister, Mrs. Eleanor Stuhlman."

Charlie W. Bigelow reports the following: "We spend six months of the year at 23 Elm Street, Brookline, Mass., and the six warmer months at Neds Point Road, Mattapoisett, Mass. I retired from business 10 years ago. I'm 85 years old, in good health and can do a good day's work cutting down trees in our woods, and running a power mower on our lawns. My wife is younger than I and between us we enjoy life. She is a good cook and a great gardener. Stop in and see us at Elm Street or at Mattapoisett." — LUTHER K. YODER, Secretary, 69 Pleasant Street, Ayer, Mass.; A. D. F., Assistant Secretary.

'96

Charles Hyde writes that he kept up active enjoyment of his work until the summer of 1958 but since then has had to devote his time to resting and caring for his eyes. He is doing pretty well in his new avocation, though he misses the joy of working. There were no monthly reports due when he was class secretary, so he recognizes the tribulations of office

at the present time and does his bit to relieve them by writing occasionally.

Joe Clary still lives on 14th Avenue in St. Petersburg, Fla., and treats his four score and five years as a perfectly normal affair. Since he is in good shape, the years offer no burden to him. Joe says he has heard of a brief answer to the question, "How did you ever make that score?" "I was born unlucky."

Ida M. Curtis died January 28, 1959, at the age of 99, in Carmel, Calif., where she had lived for 40 years. Lydia G. Weld and Dan Patch, both of the Class of 1902, sent in a clipping from the Monterey Peninsula *Herald* that gives the following account: "Miss Curtis was born January 12, 1860, in Lewisburg, Pa., and after getting an S.B. from Cornell in 1882, she taught arts and science in Boston Brighton High School until 1917. She spent the summers studying in Paris, Munich, and New York, and sketching on Cape Cod. Portraiture was her favorite expression at the outset of her career, but after a summer spent in Bermuda she concentrated on landscapes and interiors for which she was especially known. She opened her own studio in 1917 in Boston. Her works were exhibited in Boston, New York, San Francisco, Chicago, and in West Coast art centers. She was listed in the *Book of World's Notables* and in *Who's Who of American Women*. She came to Carmel 40 years ago and remained to establish her home there. An inscription on her fireplace was symbolic of this frail and tiny gentlewoman with her snowy hair and friendly blue eyes: 'The ornaments of a house are the friends who frequent it.' She belonged to many artist organizations as well as the Carmel Foundation and the Church of the Wayfarer."

Miss Curtis answered the postal sent to check addresses in February, 1957, saying: "I did not graduate from M.I.T. I graduated from Cornell in 1892 and took certain advanced courses later at M.I.T. while teaching in Boston. Before and since, my keen interest has been in oil painting." The Class has been honored to have so distinguished a co-ed as a member.—JAMES M. DRISCOLL, *Secretary*, 129 Walnut Street, Brookline, Mass.; HENRY R. HEDGE, *Assistant Secretary*, 105 Rockwood Street, Brookline, Mass.

## '97

It is said that no news is good news. If this is true, all is well with the Class.

Harking back to the good old days, the minutes note that the last undergraduate meeting of the Class was held June 9, 1897, and that at that time the class yell was given for the last time as undergraduates. Question—do you remember the yell? No prizes for the correct answer!—AUGUSTUS C. LAMB, *Secretary*, 61 Hillcrest Place, Amherst, Mass.

## '98

Our secretary, Ed Chapin, received from the New England Newsclip Agency, Inc.,

a clipping from the New Bedford, Mass., *Sunday Standard-Times*. On its auto page was an article composed and read by our classmate, Dave Fenner, on June 7, 1959. The article dealt with the forthcoming electric cars. Dave recalled the days of his youth when he was the proud owner of an electric car in Providence. He began his career in 1896 studying auto design and operation at the Providence YMCA, followed by service as a mechanic at America's first horseless carriage race track at Rhode Island state fair. After graduating from Yale and M.I.T. he worked for several firms until 1911 when he began a 40-year career with Mack Trucks. He was active in the Automobile Old-Timers for many years.

Classmate Abram French sent us a brief outline of his vacation trip during 1958-1959: "Leaving Bath, Pa., on July 4, 1958, my daughter and niece drove my wife and me to Seattle, stopping briefly at Glacier Park, Lake Louise, and Cooley Dam. After a pleasant summer with a younger daughter at Puget Sound, we traveled by train to San Francisco. Near the nation's bread basket located in the San Joaquin Valley, friends drove us to Columbia and the old gold diggings. The winter was spent in San Gabriel. Homeward bound, we stopped with relatives in San Antonio, Topeka, St. Louis, and Detroit, completing a nine months' vacation."

Abram has moved from Swampscott, Mass., where he had been engaged for many years as a general contractor. He is spending his retirement years with his wife in Bath, Pa. Incidentally, his daughter Isabelle, who is employed with the Allentown plant of the Bell Telephone Laboratories, Inc., is building a 32 by 57 foot seven-room house, complete with basement and a two-car garage. Except for the heavy and specialized technical work, Isabelle says the larger part of the construction is her own handiwork. She says she picked up the know-how from her dad and admits that he and some of her girl friends are giving a helping hand at various stages of the project. She has set the completion date at five years hence.

This last summer and fall, during frequent trips to Beacon Hill, Boston, we have passed the time of day occasionally with Maurice DeKay Thompson. He says he loves to read, and this is what you will find him doing, if the weather is favorable, in a comfortable chair on the front lawn at 75 Mt. Vernon Street. Maurice, most of us may recall, is a recently retired Professor of Electrochemistry at M.I.T.—EDWARD S. CHAPIN, *Secretary*, Hotel Vendome, 160 Commonwealth Avenue, Boston, Mass.; FREDERIC A. JONES, *Assistant Secretary*, 286 Chestnut Hill Avenue, Brighton 35, Mass.

## '99

C. Gardner Barry died in a nursing home in Sandwich, Mass., on Thanksgiving morning. He was the son of Charles and Harriet Barry of Melrose, Mass., and lived in that city while an undergraduate at M.I.T. After graduation, Gardner was

a construction engineer on the Holland Tunnel in New York City. Subsequently, he was one of the engineers on the construction of the Cape Cod Canal. Later he was in the Boston offices of the New York, New Haven and Hartford Railroad.—BURT R. RICKARDS, *Secretary*, 349 West Emerson Street, Melrose, Mass.; PERCY W. WITHERELL, *Assistant Secretary*, 84 Prince Street, Jamaica Plain, Mass.

## '00

Edward Herbert of Short Hills, N.J., died October 28, 1959, at the age of 82. He was a native of Baltimore and entered M.I.T. with the Class of '99. He graduated in Electrical Engineering in 1900 and has always been affiliated with our Class. Herbert was with the Western Electric Company for 40 years. For some years he was in their engineering department and from 1928 until his retirement in 1945, he was chief salvage engineer. He lived in Chicago and Maplewood, N.J., 31 years, before moving to Short Hills only three weeks before he died. He was a past director of the Old Guard and a member of the Ben Franklin Club, both of Summit, N.J., and a charter member of the Telephone Pioneers of America.

He was very active in church work, being a layman in the Episcopal Diocese of Newark. He was a former member of the Bishop's Council of the Episcopal Diocese of Chicago and a former vestryman of St. George's Episcopal Church of Maplewood. He had served on the staff of the Princeton Conference of Adult Religious Education of the Episcopal Diocese of Newark. He leaves his wife, Mrs. Clara Lyle Herbert; two sons, Robert Beverly Herbert of Chicago and Thomas A. Herbert of Westfield; three brothers, Robert Beverly Herbert of Columbia, S.C., Guy F. Herbert of Toronto, and Dr. William Herbert of Asheville, N.C.; and three grandchildren.—ELBERT G. ALLEN, *Secretary*, 11 Richfield Road, West Newton 65, Mass.

## '03

We understand that Ike Atwood, our class representative to the Alumni Council, has been touring Florida recently, but the lure of his charming home, 'Newtowne Farm,' in Topsfield, Mass., outweighs the urge to enjoy a milder climate on an extended stay. . . . Hewitt Crosby is again at 2531 Milmar Drive, Sarasota, Fla., where the latchstring is always out to classmates. . . . Jim Welsh is active in the Winter Park University Club and would welcome visitors.

Notice has been received of the death on September 26, 1959, of Robert Livermore, who was long connected with North American Mines, Inc. We have no further particulars as yet.

Your secretary again urges, as several of our members have done previously, that you send in brief autobiographical sketches for his files.—LEROY B. GOULD, *Secretary*, 36 Oxford Road, Newton Center 59, Mass.; AUGUSTUS H. EUSTIS, *Treasurer*, 131 State Street, Boston 9, Mass.

We have mentioned from time to time the trials and tribulations of those who produce class notes. We are annually reminded by the Review Office not to make our notes too voluminous! "A large number of short items is preferable to long stories." This is a joke to most of us who would welcome either short or long items. Some classes who are in the middle section have numerous items regarding promotions and other honors but that seldom happens to the old timers. The November issue contained the account of our 55th reunion and was longer than usual. This was noticed by the charming secretary to The Review editor but we were not sure whether her remark was a compliment or a criticism.

When the secretary of '26 gets short of news he describes the beauties of the view from his house at Pigeon Cove on Boston's north shore. Your secretary might emulate this by commenting on the view from the river side of his Beacon Street apartment. The scene looking across the Charles toward M.I.T. and "Research Row" is often beautiful in summer either day or night and even in winter it is interesting. He wrote a poem (?) about it some years ago but since The Review editors frown on such material in the class notes you will not be inflicted by it here.

After this rambling and unorthodox introduction we come to the very limited number of news items. First on the list is a report of a conversation between our treasurer and Cy Ferris. Cy makes numerous business trips to the Pacific Coast but the big event of his most recent trip was the marriage of his eldest son which brought out a general convention of the other Ferris children and their families. This type of news is not common in these days among our '04 items.

The Currier Langs are due to leave tomorrow (December 16) by air for their new winter home in St. Thomas, Virgin Islands. We shall expect a description of the view from their house in the near future.

In our last batch of notes we neglected to report that George Kaiser, wife, and daughter, all of whom were present at our June reunion, made a return visit to Boston in October. The ladies were on an antique binge but George and your secretary had lunch together one day and discussed everything from labor troubles and politics, to New England weather.

One subject we would be glad to miss but seldom do is necrology. This time we regret to report the passing of Frank S. Farnham of Wellesley, Mass. Like his father and brother he was employed by the Bell Telephone System in the engineering division. He retired in 1947. — CARLE R. HAYWARD, Secretary, Room 35-304, M.I.T., Cambridge 39, Mass.

You did not find any class notes in the January Review because Ruth and I were away the entire month of November, vis-

iting our five daughters and nine grandchildren; the first time we had seen one of the families in five years. We flew to Atlanta in one of the newest jet planes. I enjoyed my first jet flight very much. Daughter No. 1 lives in Cantonment, Fla., a suburb of Pensacola. I looked up a classmate there, whom I had not seen for at least 55 years, Fernando M. Blount, IV. He entertained me royally and we chatted about mutual friends at M.I.T.

Blount graduated from Yale, where he played on the varsity team. He played on our class football team and coached the Freshman team later. After graduation he worked as an architect in Pensacola, but due to the lack of new construction, of a size to challenge his ability, he entered the stock and bond business with his father and has been in the financial world ever since. At present he is a member of the Escambia County School Board, an area which includes Pensacola and is devoting much time to elevating the quality of schools in that county.

It perhaps is not fair to remark that our start north was hurried by a desire to get back where we could keep warm. The temperature for three consecutive mornings was 15-18 degrees, and in a house with no cellar and no central heat, we just couldn't take it. The average temperature for those three days was 30 degrees colder than in Boston. But apparently other parts of Florida were comfortable.

From Pensacola we flew to Wilmington, Del., for a visit with another daughter in Newark, Del. At Wilmington we (including my daughter and her husband, who, by the way, is with DuPont in the engineering department) were entertained by Dan Harrington, X, and his wife. Dan is still a director at DuPont and is at his desk at 8:00 A.M., works a half day and golfs in the afternoon. Dan and Mrs. Harrington were in Boston on October 5, to attend the presentation of the new M.I.T. David Flett DuPont Athletic Center.

Our next stop was at Mountainside, N.J., where we had our Thanksgiving dinner, and stayed a few days; then a brief stop with daughters in Springfield and North Reading, Mass. Glad to get back where we could prepare for the cold. This much has been entirely personal except that I did want to report on two classmates. (Andy Fisher will probably ask me if this was to justify my expense account.)

Through a notice of change of address I can assume that John C. Damon, VI, has completed his tour of duty in Korea. I am asking John to give us a story on his last two years and hope to report in part in the next issue. His new address is 645 Arcadia Road, Ridgewood, N.J. It would be nice if some classmate could give us some news on the following fellows, as they did graduate with us and our record is a blank: Harry W. Gallup, V, last address Perth Amboy, N.J.; William A. Nelson XIII, Chicago, Ill.; and Leon M. Pease, 5293 Delongpie Street, Hollywood, Calif. . . . Robert Adams, I, writes that he is still living very comfortably in the finest climate in the U.S.A., Piedmont, Calif. He plays golf regularly with a handicap of 17, also does some oil painting. He and Mrs. Adams enjoy dancing at the San Francisco night clubs. Evidently at our

55th reunion we should reinstitute a golf team with Harrington, Adams, Rhodes, Ball, and others still playing.

The rest of the news has to do with obituaries. Ralph H. Nesmith, XIII, died in Howell, Mich., on October 22, 1959. To date I have been unable to get further information. Paul A. Montanus, II, passed away in Springfield, Ohio, on April 21, 1959. I have received a clipping from a Springfield paper, showing his picture on the front page and a two-column write up of his life. When he died he was president of the Springfield Machine Tool Company, a family business, which he joined upon leaving M.I.T. He served the city of Springfield on various boards and commissions for 36 years, for 10 years was president of the Springfield Board of Park Trustees, helped form and served as vice-president and trustee of the Greater Springfield and Clark County Association, served on the City Board of Sinking Fund Trustees and in 1941 was made chairman of the National Youth Association. He was a member of the Rotary Club and the Polo Club and a past president of the Springfield Country Club. Besides his wife he left four sons, two daughters, and twenty grandchildren. I have an extra copy of this clipping, including his picture, which I would gladly send anyone particularly interested.

I was greatly shocked to hear of the death of Major Frank S. Elliott, III, in St. Louis, Mo., on October 11, 1959. Again I have column after column of clippings, but a tribute from the Advertising Specialty National Association entitled "Man of the Month" gives his story so graphically that I quote: "A few weeks ago Frank S. Elliott — the Major — retired from active work at Skinner and Kennedy Company. And so it seems appropriate at this time to nominate him as Man of the Month, cum laude. He has led a most colorful life; one that is difficult to recapture on the written page in all its aspects and in all its outstanding accomplishment.

"It started on February 8, 1882, in Gloucester, Mass. In pre-college days he was a vendor of newspapers in Gloucester and on trains out of that fishing town. During and after high school he was active in the National Guard which soon pointed up his inborn leadership and vision, qualities he has put to excellent use throughout his business life. In 1901 he entered M.I.T. and graduated as a mining engineer in 1905. During those college years, and for many years following, he was active in Delta Tau Delta fraternity. He continued, too, his interests in military affairs along with his work as a mining engineer in Colorado. As a major in the U.S. Army he was sent to command strike-breaking troops in Massachusetts mill towns and then as a company commander to the Mexican border, in 1914, during the Pancho Villa raids on U.S. territory.

"Although he was actively engaged in mining technology after graduation from M.I.T., including the development of early equipment for the separation of ore by electrolysis, he eventually became more interested in the printing industry. With Colonel Perry, an Army associate, he founded the Perry and Elliott Company

of Lynn, Mass., to do high quality catalogue printing. About 1920, Perry and Elliott Company started printing calendars for special accounts. This led, of course, to exploring the field of stock designs to be sold by advertising specialty distributors. Thus the E-LINE was born. It grew rapidly to become the life interest of the Major and the main work of the Perry and Elliott Company.

"During the depression years, after having purchased Perry's interest in the company, it became evident that the Lynn location was not advantageous to national expansion. The Major then sold control of Perry and Elliott to local interests, moved the firm's calendar manufacturing equipment to the Novelty Advertising Company and started the sales organization of the Elliott Calendar Company. To keep the history brief and to the point, we jump about two years to August of 1935 when Major Elliott made arrangements with the Skinner and Kennedy Company of St. Louis to manufacture calendars for the ad specialty trade. It was then that the real growth of the E-LINE began, from the central location he had always wanted. Skinner and Kennedy was on its way to being known as one of the most important suppliers of advertising calendars.

"Throughout his life the Major has been intensely interested in Masonic leadership and holds innumerable honorary membership cards and positions including founderships, honorary appointments, the coveted 33rd Degree, Commander of the Massachusetts Consistory, and others actually too numerous to list. As a rifleman and pistol handler he has won enough prizes, medals and cups to literally fill a museum. He has long been a member of A.S.N.A. and has served on its Board of Directors. At the recent A.S.N.A. spring show, the association honored him with a special award in recognition of his many contributions to the advertising specialty industry.

"Major Elliott has traveled America in upper berths before air conditioning was dreamed of and carried calendar sample bags when taxis were a luxury. He traveled Europe to purchase wall pockets which today few of us can remember. He has owned horses (although he fears them); made a hole in one, but never broken 80. His philosophy has been honesty of endeavor and purpose. He sees no saturation point in healthy growth within his industry and feels that, although retired from active work, he is still on the brink of new growth in an industry offering the world the only kind of advertising people ask for.

"There is probably no man in the advertising specialty industry who has enjoyed as wide a personal acquaintanceship, traveled as far, or as often, and under as many handicaps, or enjoyed such industry-wide admiration and respect as Major Frank S. Elliott. We are privileged to have him as our April Man of the Month."

I also have to record the death in September, 1959, of Victor H. Paquet, XIII, at his home, 4520 View Acres Road, Milwaukie, Ore. I have been unable to get any further information so far.

Before you read this you will have received a statement from me on the "when

and where" of the 55th reunion of the Class of '05 in June, 1960. If you have not returned your questionnaire, please do so at once. Arrangements cannot be completed until the committee has received an indication of the desires of the Class (50 per cent, at least, we hope). And remember to enclose check for \$5.00 — dues for 1960. — FRED W. GOLDFTHWAIT, *Secretary and Treasurer*, Box 32, Center Sandwich, N.H.; Gilbert S. Tower, *Assistant Secretary and Assistant Treasurer*, 35 North Main Street, Cohasset, Mass.

## '06

As you may have noted in the December issue, George Guernsey, I, being retired, was planning to head for Florida with Elsie for a rambling winter there. In November, George asked for a list of the '06 men living or wintering in Florida, which I delivered on the evening of November 15, while a number of their close friends and neighbors were bidding them bon voyage, so to speak. George looked tiptop again and they headed south the next day, so some of the classmates perhaps have already had a phone call or a visit. Since I compiled that list I have learned that Burton and Marie Kendall have spent a couple of months each winter in the Lake Wales area, Mt. Dora, and Ocala, since Burton retired in the fall of 1948. That information came in the sort of newsy letter that gladdens the heart — and empowers the pen — of a class secretary.

Burton Warren Kendall, VIII, was born November 1, 1883, at Gardner, Mass., and after high school entered M.I.T. He was a member of the Civic Club, Electrical Engineering Society, Physico-Chem Club, the Deutscher Verein, and the Instructors Club. His thesis was on "Coefficients of Expansion of Zinc-Silver Alloys by the Abbe-Fizeau Dilatometer." After a couple of years at Tech as assistant in Physics, he became a graduate student at Columbia, which he continued a second year while an assistant in physics at Barnard College. He stayed on at Columbia as an instructor until 1913, when he joined the engineering department of Western Electric Company in New York City. During the next 35 years Burton helped — like several other '06 men — to make the Bell System the outstanding example of the result of fine technical research that it is today. In the research lab of Western Electric and later at the Bell Telephone Labs, he became toll system engineer and then toll development director. Since he retired, the Kendalls have been around — a few weeks in the summer at that enjoyable Woodstock Inn in Vermont and a few more visiting Marie's sister in Rochester. Between times, they spent a month seeing California in 1954, then 10 weeks in 1955 seeing France, Italy, Switzerland, the Rhine, England, and Scotland. The next year they were on the Stockholm when it met the Andrea Doria. Next they sailed on the America making an outer circle swing through Norway, Sweden, Denmark, Munich, Vienna, Spain, and Ireland. Through the years Burton has

been one of the most loyal men of '06, attending many Alumni Days and, with

Marie, all of the important five-year reunions, so as you might expect, he says: "we hope to get on for the 55-year reunion in about a year and a half." Good for you, Burton! Did you realize it's that close?

In the letter to Mrs. Merriam, expressing the sympathy of the Class, I included the details of Charles' career as they appeared in the January notes and promptly received a note of thanks, with some additional information. His first wife Irma passed away in 1923 and Charles married Jean in 1925. There are no children. He had closed his Seattle office in 1941 and then became superintendent of construction for the Navy blimp hangars at Tillamook, Ore., thus contributing to the war work in both world wars. It was in 1943 that he retired after completing the Navy job, and shortly before his death had arranged for them to enter a retirement home, where Mrs. Merriam now resides, at 2619 Wilshire Boulevard in Los Angeles.

A note also was received from Mrs. Cady informing me of Bill's passing, so our letters crossed in transit, as I had also sent her his career. Mrs. Cady's letter expressed so well the rewarding experience of so many Tech men who have attended a class reunion after a long interval: "He so much enjoyed the trip back east for the 50th reunion and greatly appreciated all you did for him then. He saw so many of his old friends and relived the happy days of his college life talking over old times with them. I was so glad he could go." Why don't you plan now to be in Cambridge in June, 1961. It should be one of our best reunions.

Among the numerous societies and associations of which Sherm Chase is a member, is the M.I.T. Club of New York City; so when the club's December *Newsletter* carried a picture of Joe Santry he promptly sent it to me. Seems that Joe, who has a finger in numerous pies, had recently been elected a director of the Hugo Stinnes Corporation, that German "holding company that controls, through stock ownership, about 100 companies in the coal, oil, chemicals, glass, and shipping fields in Europe." Combustion Engineering, of which Joe is chairman of the board, and Hugo Stinnes "have been associated for a number of years as joint owners of a Stuttgart company, designing and manufacturing steam generating and fuel burning equipment."

Through the Alumni Office, Herbert Callman informs us that he has moved from Long Island City to 290 Collins Avenue, Apt. 5G, Mt. Vernon, N.Y.; also Knight W. Wheeler has moved from Dallas to the Elks Club, 456 Post Street, San Francisco 2; Terrell Bartlett's office is now at 232 Three A Life Building, San Antonio; Paul Lincoln has moved from Nelson, B.C., to 4524 Alpha Street, Los Angeles 32; Jim Kidder is now in residence at 7 Brooks Street, Winchester, Mass.; and Henry W. Hiss, III, has written Don Sevance to have his name completely and permanently removed from all mailing lists. Some typesetter gave me a new first name in the December Review but it is still — EDWARD B. ROWE, *Secretary-Treasurer*, 11 Cushing Road, Wellesley Hills 81, Mass.

# '07

The only important piece of news that has come to my attention for these notes is the 50th wedding anniversary celebration of Milton MacGregor. He and his wife Helen held open house on Saturday, December 19, at "Silvermead" on Lower Road in Brewster on Cape Cod. This announcement came to me, printed as a poem, on the MacGregors' Christmas card.

Mrs. Orrin W. Potter acknowledged my letter of sympathy and expressed her regrets that Orrin had not come East to attend any of the '07 reunions. . . . Otis G. Fales has a new address — Box 149, Hackensack, N.J. Please note this on your class list. It would indicate that Otis has retired from the Gregg Car Company, of which he was president. . . . I have a new address for J. Redman Clark. It is 28 River Road, Annisquam, Mass. He has been listed in your secretary's file as a "non-associate." In business, he was sales manager for the Revere Sugar Refinery with an office at 15 Broad Street, Boston.

William T. Carpenter, IX, has asked to have his name removed completely from the Alumni files. . . . George Griffin writes that he is keeping active in surveying work at his home in Woods Hole. . . . I was pleased to receive a Christmas card from Sam and Mrs. Marx. Sam's cards are very much out of the ordinary and are outstanding from an artist's point of view. Thanks, Sam.

Don had a note from Lester W. Brock, which he forwarded to me. Lester reports that he retired last September and has not, as yet, found anything of interest to do. He does hope to attend our next reunion, however. He sent his best wishes to all members of the Class.

If the men of the Class are too reticent to write about themselves, write me something of interest you have learned about some other '07 man. This is your column, of which I am only the scribe. — PHIL WALKER, *Secretary and Treasurer*, 18 Summit Street, Whitinsville, Mass.; GARDNER S. GOULD, *Assistant Secretary*, 409 Highland Street, Newtonville 60, Mass.

# '08

We are going to celebrate our 52nd on June 10, 11, and 12 at the Melrose Inn, Harwichport, Mass., on the Cape. Alumni Day at Cambridge is Monday, June 13. This will be our fourth visit to the Melrose Inn, as we had our 48th, 49th and 51st there. As in the past our headquarters will be the beach house. Make your plans now to join the gang for a wonderful time. Ladies are invited. Early reports indicate a good turnout. How about the Alumni Fund? Have you made your contribution? Better do it now, and show that '08 supports the Alumni Fund and the Institute.

Do you know about the M.I.T. Boston Luncheon Club? We meet at the Union Oyster House, 41 Union Street, Boston, on the third Thursday of the month at 12:15 P.M. You'll see many of your friends there,

have an excellent lunch, and hear an interesting speaker. The next luncheon is February 18, 1960. Better come, you'll enjoy it. The third dinner meeting of the Class for the 1959-1960 season will be held on Wednesday, March 9, at the M.I.T. Faculty Club, 50 Memorial Drive, Cambridge, Mass., at 6:00 P.M. Remember ladies are invited.

We regret to report that Charles Waldo Morrison died of a heart attack on December 8, 1959. Mr. Morrison was born in Brookline, Mass., the son of David Y. and Clara Doloss Morrison. He was head of the appraisal department of the Cross and Brown Company in New York from 1937 to 1950, and before that was with Joseph P. Day, Inc., in New York. Mr. Morrison was a member of the American Institute of Real Estate Appraisers, and was for many years a director of the United States Life Insurance Company. He is survived by his wife, Katherine Lang Morrison; two sisters, Mrs. H. C. Jones and Miss Myrtle D. Morrison, both of Wellesley; and one brother, David L. Morrison, of West Acton, Mass.

I wish you fellows would tell us what you are doing. It would be interesting to your classmates and we would know you are still alive. H.A.S.N.? — H. LESTON CARTER, *Secretary*, 14 Roslyn Road, Waban 68, Mass.; LESLIE B. ELLIS, *Treasurer* and *Assistant Secretary*, 230 Melrose Street, Melrose 76, Mass.

# '09

We are pleased to announce that Molly, XI, has appointed Francis Loud, VI, as an assistant secretary of the Class. Thus, we now have two assistant secretaries, George Wallis, II, being the other. As you all know, in conducting both the 45th and the 50th reunions, Francis performed the duties of two or three secretaries and, even with the 50th behind us, Francis is still busy as a secretary arranging names and data and corresponding with those who came and who didn't come to the anniversary.

On October 10 the Orange County and the Rockland County Republican organizations of New York State honored Tom Desmond, I, former state senator, with a large testimonial dinner at the Bear Mountain Inn in Rockland County. As we have already recorded, after 28 years' membership in the New York State Senate, nearly a record for continuous legislative service, Tom retired last December. New York Attorney General Louis J. Lefkowitz was the principal speaker and messages of congratulations to Tom were read from Governor Nelson A. Rockefeller, United States Senator Jacob K. Javits, United States Senator Kenneth B. Keating, and former Governor Thomas E. Dewey. The Class congratulates our vice-president, on this high honor on an already long list of honors.

We all recall Joan Elizabeth Clark, daughter of Florence Clark and the late Horace Clark. At its 40th reunion, the Class voted that \$500 from the 1909 fund be awarded her as a scholarship at the Institute. She was present at our 45th reunion and at the business meeting she

rose and expressed her gratitude to us. She had then just received her degree (1954). Until recently she has been employed in New York. We have just received an announcement of her marriage on November 24 to Mr. Richard Morgan Moroney, Jr. The couple were to be "at home" after the first of December at 1200 Massachusetts Avenue, Cambridge, which is very near Harvard Square and Harvard University. The secretary, on behalf of the Class, has sent them a modest gift.

We are continuing with class news received from replies relating to the 50th anniversary correspondence. We have already reported that Allen Jones had given up his reunion at Clemson College to attend our 45th at Chatham Bars Inn and he, therefore, felt obligated to attend his reunion at Clemson this past June. He tells us briefly of his career: "The first 25 years (after graduation) were spent in working up from the bottom rung in a southern textile plant to top man in manufacturing. This was incidental to providing for a growing family. What I learned then was that industry needed leadership from its top men; the junior executives could supply the technical knowledge. For the next 25 years I supplied the leadership, developing promising young men, encouraging them to make something out of their lives and creating the winning teamwork that always gets things done. No labor unions! This left me little to do except delegate authority and 'think' — a rare quality. Applying M.I.T.'s higher mathematics and Sherlock Holmes' methods, I helped solve many of the tough problems brought to me. About 10 years ago I retired to enjoy life in the mountains of western North Carolina but was called back in five years to bolster up the teamwork on my old job. That was not difficult, and after five years I retired again last year. That's all I have done in the past 50 years, just giving the boys a word of encouragement and all of us having a wonderful time working together. That has been my reward. I plan to move to Charleston, S.C., where two of my children live and let the little 'grands' keep me from getting old."

Tom Spooner wrote from Fort Lauderdale, Fla., stating that he would be unable to attend the anniversary. Since graduating from the Institute he has spent 40 years with the Westinghouse Electric Corporation, East Pittsburgh. He started doing research largely in the field of magnetics, became assistant director of the research laboratories and then manager. He was later made manager of the engineering laboratories and standards department. After his retirement he spent two and a half years in Washington, D.C., as deputy director of the conservation division of the Defense Production Administration. In addition to his B.S. degree at M.I.T., he has a B.A. and an Sc.D. degree from Bates College. He has written one book on magnetism and over 50 technical and scientific papers. He is past chairman of the Pittsburgh section of the American Institute of Electrical Engineers and American Society for Testing Materials; Fellow, A.I.E.E. and American Physical Society, and has been a member of various A.I.E.E., A.S.T.M., and A.S.A. committees.

For the past 10 years his home has been in Fort Lauderdale, Fla., and his hobbies are tennis and boating. The secretary, whose field is also electrical engineering, can attest to Tom's achievements, particularly in the field of magnetism in which he has long been considered a leading authority.—CHESTER L. DAWES, *Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass.; *Assistant Secretaries*: GEORGE E. WALLIS, 185 Main Street, Wrentham, Mass.; FRANCIS M. LOUD, 351 Commercial Street, Weymouth, Mass.

## '10

During the past month, our 50th reunion committee has met several times at luncheon at the Faculty Club. Chairman Jack Babcock has been responsible for the preliminary work. He and Hal Manson located a place in Waltham and reservations have been made for our celebration. George Lunt, Ralph Horne, and I feel that it is a very good place, having an atmosphere conducive for socializing, good food, and a good location. You probably will have received Jack Babcock's first reunion letter by the time you have read these notes.

I had a short note from Clark Arkell advising me of a check sent to the Alumni Fund and his hope of doing the same next year. I wish Clark had written more. . . . Gordon Holbrook was a guest of Shipbuilding Company at Quincy recently. The Quincy, Mass., *Patriot-Ledger* carried the following "Fore River Notes": "Gordon G. Holbrook of Maplewood, N.J., retired master shipbuilder and former executive here, was a guest recently of friends and sons of long-ago friends at Fore River. He was general superintendent in the U.S. Steel Company's shipyard in Kearny, N.J., which went out of business some years ago after 23 years. He was assistant superintendent of the Squantum Yard in World War I. Earlier he was chief estimator at Bath, Maine, Iron Works, and in Bath founded the Bailey School of Industries."

Hal Manson is now an Alumni Council Representative for the M.I.T. Club of Toronto, Canada. . . . Frank Bell is an honorary secretary of M.I.T., representing Dallas, Texas, for the Educational Council.

The above was ready for typing when the following letter from Bienev Bien was placed on my desk: "I am sorry to have to inform you that Ralph E. Gage died Tuesday morning about 10:30 A.M., December 8. He came to M.I.T. as Ralph E. Gegenheimer, by which name he will perhaps be better known. He did not change his name through marriage the way a woman could. He had considerable traveling to do and found great difficulty in getting his name across to people who made reservations for him. When he came to New York, therefore, in the mid '20s, he decided that was the time to change his name to a simpler form as a matter of convenience.

"Geg, as we called him, and I were very close all through college. We took many canoe and camping trips in the woods of Maine, Ontario, the Adirondacks, and so

forth, during the days when our physiques were equal to it. I am tempted to say that it was like losing a brother and yet I think he was more than a brother. In life, we do not choose our brothers; they are handed to us. We can choose our friends and that, therefore, sometimes results in a much stronger tie than is likely between brother and brother. Anyway, Geg has gone which leaves a considerable blank in my life.

"He was with the Mathieson Alkali Company in charge of their scientific work and research, and continued with them until his retirement. He retired eight or ten years ago and bought a farm in Northwood Centre, N.H. He started raising grapes and became something of a specialist, and gradually got into the making of wine of which he was quite a connoisseur. I visited him briefly in 1955 on his farm. He was the same old Geg except that I noticed sometimes he seemed to be somewhat preoccupied with his own thoughts. This may possibly have been the very beginning of the trouble which finally took him, hardening of the arteries. I visited him again a year or two ago when the disease had progressed still further. Just what took him off finally, I do not know for I have not talked it over with his wife, except on the phone."—HERBERT S. CLEVERDON, *Secretary*, 120 Tremont Street, Boston, Mass.

## '11

A letter from Sallie Denison, Well-sweep, Cornish, Maine, received right after Thanksgiving Day, said: "It was very sad not to have Dennie with us Thursday, as he was always so much the life of the party, but I had 12 of the family here and we had a nice day." Everyone of us will surely agree that Dennie was always the life of our parties, in a very gentlemanly way, and he will always be remembered.

Congratulations to Luis de Florez, II, who was awarded the Distinguished Flying Cross, U.S. Navy, last year. This was unintentionally omitted in previous class notes. Best wishes to Howard Williams, XI, our class V.P., who is chairman of the Class of 1911 special gifts committee. The objective of the committee, as you probably know, is to make as substantial a gift as possible to the Institute at the time of our 50-year reunion, June, 1961. Howard's chief assistant is Irving Wilson, XIV, who accepted the assignment of leadership gifts chairman. Best wishes also to Irv and all area chairmen. Bill Orchard, XI, is on the Board of Directors of the Essex County, New Jersey, Tuberculosis League, which supervises the annual sale of Christmas Seals. This year was their 53rd drive. Aside from this Bill is also treasurer of the American Water Works Association.

A letter from Jim Campbell, I, tells about the 1959 annual dinner dance of the M.I.T. Club of New York, at the Biltmore Hotel, December 2, at which 1911 was represented by Jim, his wife Antoinette, and Dick Ranger, VIII, President of Rangertone, Inc., Newark, N. J. We asked Dick for details about his "di-

mensional sound" installation, which was a feature of the dinner, and learned the following: "Dimensional sound is the outcome of a special call that I got from a friend in St. Paul, Minn., about a year ago. The friend told me that William McKnight, Chairman of the Board of Minnesota Mining, and a New York theater owner, was tired of having theaters where he could not hear what was going on, and asked if we could help him improve this situation. After some investigation, we came up with a solution which is comparable to stereophonic sound, and a definite improvement in sound for large halls. When Chairman George Dandrow '22, announced that he was putting on the New York banquet, I suggested that we might be able to help. What we did was to put two of our stereophonic sound distributors in the balcony just above the speaker's table, which spread the sound out some 30 feet. We used five microphones down on the dais instead of the usual one or two. Once again we were successful." Jim Campbell's letter said: "The orchestral music and the singing were amplified with remarkably fine sound quality and brilliance. When I remarked on this to Dick, he told me that the musicians had thanked him for making their music come out so sweet."

Charlie Linehan, I, described as the "Mr. Chips of Rindge Tech" in Bob Coyne's cartoon, was voted the Rindge man of the year, and honored at the alumni dinner of the Rindge Technical High School in Cambridge, Mass., on November 24, 1959. Charlie was head of the math department and also the athletic coach for many years, and has been prominent in football circles since his Harvard days, where he received a degree before coming to M.I.T. Hollywood's famed Walter Brennan, one of Charlie's "boys," came home for the dinner.

Charlie and your secretary are members of the Belmont Retired Men's Club, a large, fine, and friendly group. They usually meet twice each month in the social hall and gymnasium of the Belmont, Mass., Methodist Church, with entertaining speakers, picture slides, and a coffee break. A special feature was the ladies-day Christmas party.

We regret to report that Edward Tolman, XIV, head of the psychology department at the University of California, died of a heart attack November 19, 1959. He was born in Newton, Mass., in 1886. After graduating from M.I.T. he entered Harvard University, and received his Ph.D. in psychology in 1915.

Our sincere sympathy to Roger Loud, VI, whose wife Esther died December 7, 1959. Classmates Henry Dolliver, Jack Herlihy and Marshall and Helen Comstock were present at the funeral service, and Obie Clark at evening visiting hours.

William Whitney, V, retired from Creamery Package Manufacturing Company, in Chicago, on December 1, 1959, and is now residing at 63 New Jersey Drive, Dunedin, Fla. Additional address changes are: Frederick L. Woodlock, II, 57 Stonebridge Road, Cochituate, Mass.; L. Gordon Glazier, VII, Meadlands Lowell Road, P.O. Box 230, Concord, Mass.; William H. Martin, VI, 4201 Cathedral Avenue N.W., Washington, D.C.; Harold E.

Babbitt, XI, 1627 Crestwood Circle, Ames, Iowa. — HENRY F. DOLLIVER, *Secretary*, 10 Bellevue Road, Belmont 78, Mass.; JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

## '12

Dr. William F. McKnight recently passed away in Fall River, Mass. He had been a physician there for more than 40 years, and was chairman of the Board of Health and of the Board of Trustees of the Fall River General Hospital. He was an expert in criminal psychology and had testified in many homicide trials in eastern Massachusetts. Dr. McKnight was a charter member of the Fall River Rod and Gun Club. He leaves his wife Jennie, at 591 Middle Street, Fall River.

Cy Springall and his wife completed a 20-week, 32,000-mile trip around the world last spring. Cy's remark regarding India seems very much to the point when he said: "So much of the world's population is concentrated on such a small part of the globe." Starting in Europe, they visited Norway, Portugal, Spain, France, and Italy, then went through the Suez Canal to Saudi Arabia and Ceylon, spent four weeks in India, and then on to China and Japan. He was much impressed with the hospitality and creativity of the Japanese people and feels there is much we could learn from them. Naturally, he has been in great demand to show his pictures and tell of this wonderful trip.

Harold Manning attended the fall meeting of the Alumni officers at M.I.T. and reports a very interesting program. Harold was instrumental in holding the Educational Council of M.I.T. Annual Student Guidance Conference in Waterbury. — FREDERICK J. SHEPARD, JR., *Secretary*, 31 Chestnut Street, Boston 8, Mass.; JOHN NOYES, *Assistant Secretary*, 3326 Shore Crest Drive, Dallas 35, Texas.

## '13

The Review sent in the following item for the Hartford, Conn., *Times*: "The addition of four teachers to the staff of Suffield Academy was announced by headmaster Appleton H. Serverns. Leon W. Parsons, retired assistant to the president of the Tidewater Oil Company, will join the faculty to teach chemistry. He holds a B.S. degree from M.I.T. and an M.A. and Ph.D. from Harvard. He has taught chemistry at M.I.T., Harvard, and Wooster University in Ohio. At M.I.T. he was professor of applied chemical research. Dr. and Mrs. Parsons have moved from Washington, D.C., to Suffield and are residing on North Main Street." Good luck Lee and Polly.

Larry Hart surely performs wonderfully as class agent as well as furnishing us with happenings of our classmates. He sent a condolence letter to Mrs. Malcolm W. Leonard in reply to a note from her, announcing the death of Malcolm on October 12, 1959. To Malcolm's family, we extend our most heartfelt feelings in the great loss of such a good man and

classmate. We personally regret that we had not been fortunate enough to visit the Leonards in our neighboring town of Avon, but you can all be assured that we shall call on Mrs. Leonard in the near future.

Eugene L. Macdonald has made news in a big way. He was selected to serve on a jury, composed of six nationally known architects and engineers, by the American Institute of Steel Construction, Inc. Gene was to help judge the bridge design competition, sponsored by the American Bridge Division of U.S. Steel. The jury spent two weeks in seclusion at Hidden Valley, Gaylord, Mich., where the members examined and evaluated 300 entries. They awarded the 15 winners prizes ranging from \$15,000 to \$500. Competitors presented entries from 36 states and 28 foreign countries. The jury praised the competitors and we quote the summary remarks of Gene Macdonald, Chairman of the Board of Parsons, Brinkerhoff, Hall and Macdonald: "Thousands of steel bridges carrying crossroads over divided highways have been designed and built in this country alone. The leading bridge designers in state highway departments, in private engineering firms, and other individuals with or without an engineering staff have produced these designs. In most instances, economy, safety, and appearance, in that order, have been the guiding factors. In the face of this situation, it was interesting and a little surprising to me to find in the array of designs submitted in this competition so many radical departures in detail, or in basic conception, from the bridges that have been built. The results of this competition demonstrated that progress in the design of small steel bridges is not static." By the way, another member of this jury was Craig P. Hazelet '18, of Hazelet and Erdal, consulting engineers of Louisville, Ky.

Lester Gustin has compiled and published "The Story of Sunset Towers," a 331-page report, primarily of interest for 38 leaseholders of a co-operative apartment house in downtown St. Petersburg, Fla. This beautifully bound treatise records all transactions, letters, bills, accounts, and reports of meetings, from March 1955 to March 2, 1959, the date of the completion of the building. This outstanding building, with its attractive apartments (in one of which the Capen family had the pleasure of enjoying the hospitality of Gus and his charming wife, February, 1959), stands as a monument to Lester Gustin. Starting as a mere leaseholder, Gus, with his usual Yankee savvy and ability, passed through four years of all the hectic and trying times that anyone can imagine. First he was a disappointed leaseholder; then a consulting engineer; a member and chairman of the Board of Directors of Suncoast Towers a member and president of the Solar Corporation (the holding and promotion company); stockholder and head of Hed-Ake, Inc.; and finally a member and president of the now Suncoast, Inc. Gus, it's a pleasure and privilege to congratulate you on this outstanding accomplishment.

As many of you who attended our 45th reunion remember, Lester Gustin and Ed

Cameron were chosen to prepare and submit a class history at our 50th. You can see that now that Gus is a mere leaseholder again, he will have the time to go to work for 1913. Watch our column for more facts and figures regarding this history. Another feature to look forward to is the interim reunion in 1961. Your scribe was delighted to talk to Frank Achard on the phone this morning. Frank has called an organization meeting for the 1961 reunion at his house on January 6. Attending will be Charlie Thompson, yours truly, and our wives. The plans for our next get-together will be reported in our notes in a subsequent issue of The Review.

Ed Cameron has written that he is having his book published. Its title is "The Father of American Manufacturing — Samuel Slater, Pioneer Industrialist." We're proud of you Ed, and looking forward to receiving a copy of your latest book. You can't keep a good man down. So, boys and girls, see you next month. — GEORGE PHILIP CAPEN, *Secretary and Treasurer*, 60 Everett Street, Canton, Mass.

## '14

By the time you read these notes, our class President, Charlie Fiske, will be playing golf in the warm sun of Arizona. He left Maine early in December and, after visiting his children en route, settled down in Tucson for four months of nice warm weather and golf. Another of our classmates who runs away from the New England weather is Leigh Hall from Concord, N.H. Leigh is spending the winter at Long Boat Key, Fla.

You will recall that the death of Tom Chase was recorded a few months ago in these notes. A letter has been received from his widow enclosing a check which Tom had bequeathed in his will to aid the 1914 fund for our 50-year gift.

When your secretary learned that John Giffels had retired and moved to Hampton Bays, N.Y., he wrote to him to find out where such a place was, as it was not listed in his atlas. Jack sent back a map full of details. Hampton Bays is near Southampton, Long Island, which Jack says is only two minutes from the bay where there is plenty of fishing, and four minutes from the ocean, beautiful sandy beaches, and wonderful swimming. He also says that anyone visiting the Brookhaven National Laboratory will find a welcome at his house, just 20 miles farther along.

Dinny Chatfield, Secretary of United Aircraft Corporation, has just been elected chairman of the Connecticut section of the Institute of the Aeronautical Sciences . . . Starr W. Stanyan, already a Director, recently was elected a Vice-president of the Sprague-Hoague Corporation, a subsidiary of the United Shoe Machinery Corporation. He is located at Lynn, Mass.

Ed Wente has received many honors in the acoustics field. Now his son is apparently out to pass him in honors. He has a Ph.D. in Egyptology and is one of 22 experts, in the U.S., on that ancient land. He has made new discoveries in the ruins

of Luxor and has also made a study of the writings on the walls of the Temple of Ramses III, an Egyptian Pharaoh, who died in 1115 B.C.

It is with great regret that we report the death of Dana H. N. Mayo, on November 12, 1959. It will be recalled that he seldom missed a reunion or Alumni Day. He made a great effort to be present at our 45th reunion in June. Late in the summer he suffered a severe attack and died not long afterward. He had been ill for some time before his last attack. Earlier he had worked for the Ford Motor Company, spending the last 25 years of his career with the Babcock and Wilcox Company. He retired from there about 10 years ago because of ill health, at which time he moved from Ridgewood, N.J., to Newcastle, N.H. Although his early home was in Hamilton, Ohio, he prepared for the Institute at the Rindge Manual Training School in Cambridge, Mass. On July 2, 1922, he married Ethel M. Chapman, who together with their son, Dana W., an M.I.T. graduate, survive him.—HAROLD B. RICHMOND, *Secretary, 100 Memorial Drive, Cambridge 42, Mass.*; CHARLES P. FISKE, *President, 4801 East Broadway, Tucson, Ariz.*; HERMAN A. AFFEL, *Assistant Secretary and Class Agent, R.F.D. 2, Oakland, Maine.*

## '15

Come on along! Everybody get ready for our 45th reunion, June 10-13, at Snow Inn, Harwichport, (Cape Cod), Mass. Plans and preparations are moving ahead to assure you another wonderful class reunion. Plan for it now—details later. Come to be with that old 1915 gang again. Details of the New York City class dinner, January 15, will be in next month's column. Al Sampson couldn't make the Boston class dinner in November but sent best wishes for the meeting and regards to classmates. . . . Boots Malone had some surgery on October 30, but wrote on November 17 that he had recovered and was in good shape. Also, at that early date, he said it was 8 degrees above, with snow on the ground and ice in his pond. The retirees in Florida miss such glories of winter.

Larry Bailey and Thayer MacBride, both retired, have been laid up in Boston hospitals with serious surgery. I've been to see them both several times and despite the tough time they've had, they both have wonderful courage and spirit and send cheerful regards to all classmates. On his Christmas card to us, Larry drew fingers crossed as a good luck sign and said he'd be at our 45th and was planning for our 50th. There's an example for many of us. Plan to see Larry at the reunion. Our 50th fund and our share in the Alumni Fund continue to go ahead steadily. Do your part—support the Class and M.I.T.

On November 2, Evers Burtner wrote this interesting letter from the Grand Hotel in Genoa, Italy. Upon his return Fran and I plan to spend an evening with Mary and him to see his colored pictures: "Mary and I left New York City on August 28 on S.S. United States for Mary's

first visit to Europe. (My last one was in 1928.) We spent two weeks in Great Britain and one week each in Denmark, Germany, and Holland. Our stay in Switzerland included a day or so each in Zurich, Lucerne, Interlaken, Zermatt, Locarno, and Lugano. In this Italian-Swiss Lake region we were disappointed to experience a haze or cloudiness that made the mountains bordering these lakes indistinct in detail. On the other hand, Zermatt provided a wonderful view of the Matterhorn, covered at the top with snow. There also was some snow at the Gornergrat where we went, via cog railway, from Zermatt. We have spent a little over two weeks in Italy, visiting Milan, Venice, Rome, Florence, Sorrento, Capri, and Amalfi. It was quite stormy the day at Capri, in fact our 13-foot double end row boat was the last of five or six boats to enter and leave the Blue Grotto that day. The authorities considered the water too rough. We have enjoyed all the countries visited, the people in general are kind. However, many of them don't understand English and I can't handle Italian or French. Of the older cities, Venice and Amsterdam had special charm due to the many old buildings, canals, customs, and transportation. They are small in size. In a week we will sail home on S.S. America."

Herbert O. Maxwell died August 24, 1959, in Taft, Calif. The big class interest and business now is to plan for our reunion. I'll see you there!—AZEL W. MACK, *Secretary, 100 Memorial Drive, Cambridge 42, Mass.*

## '16

As mentioned in the January column, E. C. Gagnon has gotten back into harness again, but this time as president of a bank. On June 1, he became President of the Farmers and Merchants Bank of Hurtsboro, Ala.: "a small country bank whose activities consist of financing pulpwood, lumber, cattle and cotton farming operations, aside from regular banking." He finds its activities interesting—in principle not much different from his former experience in running his own financial affairs and operating a tire factory bank. Says the only person he recognized in the 1959 reunion picture was Bob Wilson, whom he saw last in 1927 or 1928. As far as our meager records show, George Repetti (deceased) has been the only other 1916 bank president.

Ralph reports receiving a Christmas card from Irv McDaniels, sent from his new location—Spain. Irv plans to be in Spain for approximately four months and writes: "Just a couple of vagabonds, investigating every side road that looks interesting (and most of them are). Had a most unusual trip through Yugoslavia and spent over a month in Italy. It was terrific."

Here's a bright story about Vannevar Bush during World War II (when he was director of OSRD and living near Washington), published in *The Saturday Review* under the caption: "A Bird in the Yard is Worthy to Dr. Bush." It goes like this: "This man loves songbirds. He

enjoys hearing them sing around his home. When he lived near Washington, D.C., he spent many hours in his workshop making houses and feeding stations for them. After these havens of welcome were placed about his garden, he sat down with his pipe, stretched out his legs, propped up his feet and listened. What he heard was not so much singing as squawking. The neighborhood pigeons and bluejays were hogging the food and muscling the smaller warblers off the perches. The man swore at the squabbling. The puffs on his pipe came slower and slower. After a while, he went back to his workshop. He hunted out thin metal wires and twisted them into coils. Then he took a saw, returned to the garden, and made small repairs on the birdhouses and the feeders. Soon the place was gay with song. The pigeons and the bluejays just couldn't get a foothold after that. Every perch they landed on gave way beneath them, dumping them into the air. Not being mechanically inclined, they never learned why. Neither did the songbirds, but their weight was slight enough to be easily borne by the springs beneath the hinges on the perches." How's that for a feat of engineering?

Dina Coleman, who, we again are proud to say, received an honorary LL.D. from Transylvania College last June, has made it clear that his friends are allotted only two occasions to call him "doctor" (your secretary has now had two), so this is a warning for the next reunion. Dina has been shouldering the job of chairman of the finance committee of Transylvania College, and, we judge, has been the center of outstanding Transylvania accomplishments—a decision to remain independent of all present and future Federal aid, and a balanced budget even though 15 per cent of income goes to student aid. Speaking of other things, Dina gives an account that mustn't be condensed for it might lose the Coleman touch: "Harold, my friend, I am in a bind. With time on my hands and money with which to enjoy it (thanks to a generous father, some hard work, and a great many fortunate circumstances over which one has little or no control), I am stuck right here for some time to come. My wife, who, bless her heart, has put up with me for 35 years, is not well, and does not now enjoy parties, travel, and most of the things we chase after and never catch. Being of a generous nature and broadminded, too, she has no objections to me chasing around all I want. Now here is the bind: without her, I just do not want to. Of course, there are the sports which involve physical exercise, but everyone knows how I feel about that. Then there are hobbies. Right now, we are building a machine which will set the coal mining business ahead 40 years. It will (I hope) mine coal and clay from the same heading, and keep them separated; and do it better, with half the men and machinery now being used. Rube Goldberg never, but never, dreamed up anything like it. We plan to get it in operation next month. The only time a slide rule was used was to calculate the capacity of the oil reservoir. Stress and strain tables not at all! When

we throw the switch, everyone had better take cover!" We hope to hear more at the 44th in June!

Vert Young's safari in east Africa with his wife last summer was the result of a cherished ambition for a good many years. They sailed June 6 from Charleston, S.C., to Genoa, took the train to Rome, then BOAC to Nairobi in Kenya. There the safari started, with a white hunter, two black gunbearers, and a boy to take care of the jeep while they were hunting. Ten other Africans completed the party. Vert says: "Because I particularly wished to get a sable antelope, oryx, and a greater kudu, we hunted in Tanganyika. I had a nice chat with Herb Mendelson in New York early in May, so was somewhat prepared for what was forthcoming. However, with respect to the rigors of driving in a jeep through high grass over concealed elephant tracks, Herb indulged in masterly understatement.

"Our first camp was northeast of Kondoa. The first task is of course to sight the rifles and let the white hunter discover whether his clients know the muzzle from the butt. We passed that exam and were ready to take off in pursuit of quarry. Now occurred the second most humiliating experience of the trip. I found to my intense mortification that Sylvia was a darn sight quicker at spotting game than I was—too much slide rule peering in days gone by, I guess. At Camp No. 1 we collected a zebra and kongoni, a Grant's gazelle in the record class (horns over 28½ inches) and a huge eland, the largest of the African antelope, weighing about 2000 pounds and wonderful eating. Camp No. 2, south of Kondoa, was pitched in the lee of a baobab tree, 46 feet in circumference by actual measurement, but no leaves at that season and negligible shade. Here we hunted buffalo, leopard and greater kudu. The real achievement of Camp 2 goes to Sylvia's credit. The only way to get a leopard is to find his tracks, drag a bait, hang it in a tree where he can reach it with one paw but can't eat it all at once, and after waiting a couple of days to be sure he is feeding on it, conceal yourself before dark to await his arrival at dusk. Sylvia had been practicing with the 30:06 on several occasions and when after three hours' wait the leopard crawled out on the limb, she let him have it through the neck and into the right shoulder, a perfect shot.

"The natives fear leopards and when old 'chui' is killed, it is time to celebrate. While the hunt was on, I had to stay in camp. I heard the shot and within 30 minutes the jeep drew near to the tune of the most unearthly yowling by the gunbearers and the jeep boy. The boys in camp took it up, howling and beating tin pans. When the jeep stopped Sylvia was lifted into a camp chair, carried into the mess tent and soundly kissed by the good-looking white hunter—then general shouting and handshaking. The din was overheard by another safari camped (accidentally but unethically) about two miles away and the white hunter, his wife and client piled over to help us celebrate. The white hunter was Pat Hemingway, son of the famous Ernest, and a most likable person with a cute

little wife who drove the jeep." In the next issue we'll have a few more bits of Vert's story—a most successful safari by any standard—8 or 10 trophies brought home.

We regret to report the death of Joe Meigs on October 30 after a long illness. Joe had to give up his patent law practice in New York in 1954 following a cerebral thrombosis. A chemical engineer, he got an M.S. from Boston College in 1921, and an LL.B. from Fordham Law School in 1931. He was admitted to the New York State Bar in 1932; and was also admitted to practice before the Supreme Court of the U.S., the U.S. Court of Appeals for the District of Columbia, the U.S. Court of Customs and Patent Appeals, and the U.S. Circuit Courts of Appeals for the Fourth, Southern, and Eastern Districts. He was a life member of the New York Patent Law Association, the American Patent Law Association, and the American Chemical Society. Earlier associated with Bohleber and Ledbetter, then Gifford, Scull and Burgess, and Curtis, Morris and Safford, he established his own law offices on Madison Avenue in 1951. He was the author of two books on patent law as well as numerous monographs and articles. He served as a lieutenant in the chemical warfare division in World War I, and was a trustee of the village of Hastings-on-Hudson from 1936 to 1941. He is survived by his wife, the former Louise Berthold, and one son, Commander Joseph V. Meigs, U.S.N.A.F.

Mark Lemmon tells us that he took a vacation in October and November in France and England. In Dallas, the name Mark Lemmon has been a byword for the finest in architecture for many years. We don't have a list of the many buildings his firm has designed but know that, among other things, they have done 20 buildings for Southern Methodist University since World War II, and several buildings for the University of Texas. He is also consulting architect for both universities. In the reunion picture he recognized Steve Brophy, Bob Wilson, Bill Barrett, Izzy Richmond, and your scribe. He has seen Bob Wilson from time to time in Dallas, for Bob: "was admired greatly by the oil fraternity in these parts and was called on to make public appearances. We have another great member of the Class of 1916—C. J. McCarthy, President of Chance Vought Aircraft. Just before we went to Europe, he and his nice wife were dinner guests in our home. I always brag about being in his Class, as the years have been so kind to him, giving him an appearance that belies his statistical age." Regarding M.I.T., Mark says: "As the years have rolled by I have been impressed with what M.I.T. gave me when I was a student there. At the time I did not realize what a tremendous architectural education I was lucky enough to be getting, and I give thanks that good fortune allowed me to get my entire professional education there."

Eric Schabacker writes from Erie, Pa. Last spring he and his wife went to San Francisco by boat through the Panama Canal, a trip he recommends for an enjoyable rest. They visited their son, a lieutenant-commander in the Navy, who

was then stationed at the Air Missile Test Center at Point Mugu, Calif. On their return they stopped at Yosemite and then at Denver, where their oldest daughter lives with her husband and their seven children. Their latest grandchild, No. 18, was born in Stockbridge, Mass., in November. This is the class record, we believe, except for Duke Wellington who, partly because of a second marriage, has 21. In 1946, Eric left a porcelain enameling plant, which he had helped to organize in 1922, to start a miniature porcelain enameling plant, making only dials for gas and water meters. He says: "This venture has been a lot of fun. We built a new shop with good equipment in the suburbs of Erie in 1955. Business has been good so far. A very capable son-in-law is the treasurer and general manager." Eric says they occasionally get the chance to see George Brewer '18, and try to see Ray Brown as often as they can, but it's over a year since they've managed that.

We're all very glad to hear that Steve Berke's wife, Louise, is now coming along well and that she won't miss the 1960 reunion at the Cape. Steve himself has been doing big things during the past few years, his Berke Moore Company having completed about \$20 million of construction over a five-year period—bridges, tunnels, roads, dams, and so forth—including a \$6½ million project for the central artery of the Fitzgerald Expressway. In August, 1956, his company was low bidder on what they consider the blue chip contract of their career—the section of the central artery extending from Kneeland Street (Chinatown) to Dover Street. This involved all of the old, plus new, skills in the construction books—building a structure over the tracks of the New Haven and the Boston and Albany railroads, and protecting trains and equipment at the busy South Station terminal. Back at the time of our 25th reunion (1941), Steve resigned from a job as chief engineer of a Boston construction company for which he had worked for 17 years, and with Raymond L. Moore started out on his own. In 1950 they broke into the "big time" around Boston when they were low bidders for the first section of the central artery in Boston (section in Charlestown that joins with the Mystic River Bridge and extends through City Square to the Harbor shore line where Paul Revere waited in April '75 to catch the signals from the North Church). Other heavy contracts included the first section of the Northeast Expressway (from the northerly end of Mystic River Bridge in Chelsea toward Revere); the underpass Traffic Circle (west end of North End Bridge across the Connecticut River in West Springfield) plus the westerly end of Memorial Bridge across the same river—both items of major improvement on U.S. Route 5; the interchange in Everett (where Revere Beach Boulevard crossed Broadway and Main Street); the rebuilding of Revere Beach Parkway and extension to the Fellsway Traffic Circle. As one can see, Steve has much to be proud of and there's more to come!

Now more about the Arvin Pages' trip last spring. En route to Phoenix they stopped off at Casa Grande National

Park. This includes the remains of an Indian village. Arvin says: "As these Indians depended on their crops for existence, it was essential that they know exactly when they should start planting. They evolved a very unique scheme. In the east wall of the main building they made a round hole about two inches in diameter. Directly opposite they made a similar hole in the partition wall. On March 7, the day planting should begin in this region, and on October 7, the sun shines through both holes and makes a bright spot on the opposite wall. On no other days in the year does this occur. So when, following winter, they first saw this spot of sunlight at dawn, they knew it was time to get busy with their planting. With this evidence it looks as though they were very good engineers!" In Las Vegas the Pages passed up the elaborate night club casinos and the 2:30 naughty shows and settled for a visit in the downtown area where there are about three solid blocks of gambling houses. "We tried a few slot machines but did not try the poker, blackjack, craps, or roulette. I figure we made money by keeping on the side lines. This sort of life, recreation if you will, does not appeal to me. I've seen what it's like and I'm satisfied to be elsewhere. We did get a surprisingly good and unusual dinner at the motel."

Rudolf Gruber and his wife were in the Mediterranean in September—following the same route as in 1955. The main reason for this trip was to attend the golden wedding anniversary of his brother at his villa overlooking Naples. Their calls at Beirut, Alexandria, and Athens gave them a chance to observe changes, if any, since four years ago. Rudolf reports as "outstanding," the "boom" in Beirut, with apartment houses and hotels shooting up: "Alexandria, however, indicated a very poor status of the Egyptian populace (hand labor, horses, mules vs. concrete mixers and trucks). Athens is working hard with U.S. aid and so are Naples and Genoa where war damage gradually is being repaired." Rudolf says they arrived in Hoboken at the time of the dock strike, but got off all right with the help of office personnel acting as porters.

George Petit retired the first of 1959 from the research department of Travelers Insurance Company, but he's carrying on, on his own, with his specialty—trend analysis—particularly a prediction technique as applied to business economics. Periodic reports to clients keep him busy. His specific method, "prediction plotting," has been published in various economic and engineering mediums including the *Engineering News Record*. "It is used as a forecast check by some public agencies and private businesses. I find the pursuit of this work a happy and time-filling substitute for the old rat race. It is an incentive to keep on going, which seems to be in accord with advice to the retired."

Joel Connolly recently sent Ralph a photograph of a fortune-teller and his place of business on a sidewalk in Taipei, China, and on the back, Joel's wife, Virginia, wrote: "Professor Gordon Fair was here recently, and Joel saw him later again in Tokyo. We wish we had more information about our classmates in Course XI (Sanitary Engineering). Thank you again

for what you are doing and have done for our Class! Joel was recently elected vice-president of our M.I.T. Club of Taiwan (Formosa). Best wishes!" For Course XI and others who knew or know Joel, here's his address: Joel I. Connolly, MSM/C A.P.O. 63, San Francisco, Calif. Be sure to use an air mail stamp and he'll get your letter in a couple of days.

An item from the fall issue of the M.I.T. Newsletter: "Dedicated on Alumni Day, The Vannevar Bush Room, in Building 10. Long needed by the Institute's largest department (Course VI), it will be used for seminars, staff and professional meetings, and staff-student gatherings. And a very handsome room it is, presided over by a nearly life-sized Karsh portrait of Dr. Bush." And again: "Retired last June, but remaining on the Faculty as lecturers, two members of the Class of 1916, Professor Shatswell Ober (Aeronautics and Astronautics) and Professor Stephen G. Simpson (Chemistry)."

Just before going to press we received the sad news that one of our faithful, Dutch Gaus (also known as Gil), was killed in an automobile accident while driving to work from East Orange to Teterboro, N.J., on December 9. He apparently was struck from behind by a tractor trailer-truck and never regained consciousness. Along with other Tech men and fraternity brothers, Jim Evans attended the funeral services in East Orange.

Once more—your letters and cards are what make these notes interesting. If you haven't been quoted in the last six months, please consider yourself due. Write on the slightest pretext to Ralph Fletcher (Box 71, West Chelmsford, Mass.) or to — HAROLD F. DODGE, Secretary, 96 Briarcliff Road, Mountain Lakes, N. J.

## '17

We are glad to start these notes with news from Walter L. Medding, who celebrated his 65th birthday last December. Walter writes: "I was on river improvement and flood control work at the Memphis, Tenn., engineer district when the war broke out, and in July 1942, was ordered to Texas to organize and train an engineer regiment. On the day designated by Third Army as 'activation day,' the regiment consisted of me, two road graders and two power shovels. Ten days later my first officers arrived—25 brand new second lieutenants, and then in two more weeks we received our cadre. Our 'fillers' came mostly from the Ohio Valley states. We left for overseas in the spring, serving initially in North Africa. As part of the Fifth Army, we made the Salerno landing and participated in all operations of the Italian campaign. One of our jobs on the beachhead was the construction, over the Sele River, of the first fixed bridge on the European continent. A few months later plans were started for the occupation, rehabilitation, and administration of the city of Rome whenever it should be captured, and I was designated as engineer for the group assigned to that mission. Entering the city early on the day it fell, I remained there for the next 15 months, continuing as engineer when our head-

quarters became a combined Anglo-American unit. Among the more pressing problems was the restoration of the city's water supply and electric power, and our success in performing the mission was indicated by the award of the Legion of Merit, Order of the British Empire, and Order of the Crown of Italy.

"On returning home, I was assigned as engineer supply officer at the Memphis General Depot for two years, and then for two more years was chief of the Chicago procurement office, Corps of Engineers, where we were engaged in buying equipment and materials for all of the armed services. Following this was a tour in Japan, initially and briefly at Kyoto, then for nearly three years on the staff of the engineer, Far East Command, at Tokyo. One of my daughters was an Army librarian in Tokyo at the same time, and a son was stationed with an engineer unit there. My wife arrived on the last transport to bring dependents (because of the Korean conflict), and we were able to get quarters adjacent to those of my son, who had already left for Korea.

"I returned home in 1952, assigned to Fort Belvoir, Va., pending retirement in 1953 after 36 years of service. We bought a house in Springfield, a new community about 10 miles south of Washington. We are also 10 miles from Fort Belvoir where a son and a son-in-law have been instructors at the engineer school—a circumstance which has permitted us to see a good deal of some of our 10 grandchildren.

"Two years ago I qualified for membership in the 'Eisenhower club' with a coronary occlusion, but excellent care at the Fort Belvoir hospital permitted my return home in seven weeks. My activity has been somewhat restricted, of course, and I'm on a limited diet (everything I like is verboten), but these precautions, together with the use of anticoagulants seem to be a satisfactory answer to otherwise normal retirement."

Ken Richmond reports as follows concerning the death of Arthur Miller: "Arthur Miller, I, died of a heart attack at his desk in Washington about noon time on October 26, 1959. He was 65 years of age. Art was one of those in the 1917 Class who received a B.S. degree from Harvard at the same time he got his degree from Tech. After serving as a captain in the Army in World War I, he was with the Tennessee Eastman Corporation, at Kingsport, Tenn., until 1927, advancing to the head of the engineering department. Later he was successively assistant director of operations for the general chemical division of Allied Chemical Company, a consultant to the City of New York, and later, director of the department of chemical engineering with the Tennessee Valley Authority. In 1945, Mr. Miller was appointed assistant to the president of Rohm and Haas, Philadelphia. He traveled extensively for that firm. On December 31, 1958, he retired, and at the time of his death, he was an officer of the International Finance Corporation and an advising engineer to the World Bank. Art is survived by his wife and one son, Arthur P. Miller of Chapel Hill, N.C."

Ken Bell, who, between trips around the world, lives at Mirror Lake, N.H.,

writes: "John and Sally Holton spent a night with us on their 40th wedding anniversary tour (Vera and I met at their wedding) and while we attended a harvest supper that night, we saw Phil Cristal, who has a summer home just above ours. We returned the Holton's call on our way back from Cleveland, and John took us through the sumptuous new Carrier plant in Syracuse. John is looking forward happily to retirement next spring, at which time he and his wife hope to build a new home.

"We called on the Rudy Beavers recently (they live 25 miles away in spring, summer and fall) and we found out they are planning a European trip early next year. We have been busy this year developing our land, and have sold a third of the 1670 feet of shore front we are offering on Lake Winnipesaukee."

The random notes section is made up largely of newspaper clippings. The first of these is the announcement in the Boston papers of the decease on November 30 of Amy (McEwen) Dunning, wife of Stanley C. Dunning. Our sympathy to Stan in his loss.

Prof. W. H. McAdams, recently retired from M.I.T., has been named as a winner of the 1959 Founders' Award of the American Institute of Chemical Engineering. The award is given for "outstanding contributions in the field of chemical engineering." Here is some news about Penn Brooks under a newspaper headline "M.I.T. Sponsors India Seminars." The article states: "Some of India's top business management leaders will participate in a series of executive development seminars in India under a program sponsored by M.I.T. . . . Dean Emeritus E. P. Brooks of the School of Industrial Management will head the faculty group for the 1960 seminars."

Announcement is made of the appointment of John A. Lunn to the Board of Directors of the American Research and Development Corporation. Al is currently vice-president and director of the Kendall Company. . . . Our class President, Ray Stevens, has been named to the board of overseers of the Amos Tuck School of Business Administration at Dartmouth College, according to an announcement by President John Sloan Dickey.

Ed Aldrin of Montclair, N.J., was named chairman of the Salvation Army Christmas Committee for that town. . . . The geology library of the late Irving B. Crosby, international consulting engineer and geologist, will be given to M.I.T. under terms of his will. His library includes many maps, survey reports, and detail statistics dealing with geological formations in many parts of the world. . . . Francis V. duPont was recently cited as Delaware's Engineer of the Year, by the Delaware Society of Professional Engineers.

Stanley M. Lane, as President of the New England Baptist Hospital, was prominent, along with Dr. Cattell and many other Boston leaders, at the recent funeral of Dr. Sarah M. Jordan, one of the great doctors of the Boston area. She was a co-founder of the Lahey Clinic and internationally known as a specialist in disorders of the digestive tract. Stan was recently re-elected as President of the hos-

pital and was quoted in the Boston newspapers as follows: "There is a dangerous tendency among hospitals to concentrate on today's problems and neglect tomorrow's. This is not so at the Baptist Hospital. Studies for the future at the hospital have been going on continually for more than 15 years."

Today's "best smile" states that George Bernard Shaw once received a letter addressed George Bernard Shaw. In a beard-tossing fury, Shaw roared to his wife that his correspondent could not even spell the name of the world's greatest man. Moreover, he fumed, there was no such word as "Shawm." Shaw's wife, one of the world's most martyred women, quietly disagreed, led Shaw to a dictionary and pointed to: "Shawm—an old-fashioned wind instrument." — W. I. MCNEILL, *Secretary*, 107 Wood Pond Road, West Hartford 7, Conn.; STANLEY C. DUNNING, *Assistant Secretary*, 21 Washington Avenue, Cambridge 40, Mass.

## '18

Done in bright, splashing, glorious colors the entertainment entrepreneurs of Spain begin the afternoon's program with a grand parade. First come the mounted picadors, armed with short spikes to thrust into the bull's neck in the expectancy of stimulating his activity. John Kilduff, the great stimulator, has been actively pumping up our class spirit, especially in connection with our 50-year gift to the Institute. In this he has the magnificent assistance of Pete Sanger. So expect to get it in the neck if you do not give ear. The parade of events that guides our destinies brought us together at the M.I.T. Faculty Club on November 30. During the conversation I reminded John that our Class has distinguished itself, among other things, by never having a penny's worth of damage to pay because of pressing beyond the limits of social decorum at any reunion. He replied that we did our damage Freshman year when, during the celebration of our Field Day victory, we bopped the Dean of Students on the head with a biscuit. Dear old Dean Burton! He deserved his honor of having a son on the U. S. Supreme Court. Furthering the stimulation referred to above, John has solicited Phil Dinkins' promise to address an interim gathering of the Class, to be held at the Faculty Club early next spring. Phil, incidentally, is just back from Europe whither he has been for the "steenth" time. Merely to broaden the scope of his stimulating activities, John lured, coaxed, and bludgeoned Bill Wills into a muddy walk in connection with some sort of land speculation in Exeter, N.H., the exact nature of which deponent sayeth not. However, when it comes to business activity, John eagerly spoke of the parts his company is making for Sylvania, to be used in a night light that works on the principle of a Leyden jar, sells for 98¢, and runs for 50,000 hours at a cost of 3¢ per year. And of course his own countenance lights up when the conversation turns to the three cute little granddaughters his daughter has given him. And, bless his kind heart, he has

started a general movement to have the brethren call me "Sandy," which is a name used by good friends and particularly dear to me.

Following the picador comes the toreador, who holds his own body rigidly still, the while shaking his cape. This, the bull finds a most frustrating target. On this same chance occasion at the Faculty Club, John and I ran into Sax Fletcher. Since the days of competition for positions on *The Tech* or on the staff of *Technique*, anyone who has tried to gore Sax has found him a frustrating target. He and his wife were at the Faculty Club because, as a trustee of Phi Gamma Delta, he was stopping over for the annual meeting on his way back to New York from the farm. On Thanksgiving his entire family had convened in Greenfield, N.H., in a 160-year-old house, only a short distance from where Sax was born. In it I have seen hand-planed pine boards 26 inches wide. Here the family had assembled to devastate a 25-pound turkey, an enormous roast of beef, and to drink all the milk they could guzzle from his herd of 48 imported cows. There were 15 people in all. This included the four children, their spouses, and all the grandchildren, for a three-day romp which even provided playing croquet in the first light snow of winter. Despite the rigid stance, toreadors do get around, and so does Sax. In preparation for his retirement next spring, he is visiting all the offices of his company throughout the country to be sure they are in good shape for his successor. Thus, he was recently on the West Coast. In Seattle he saw Don Bradley, who runs the G. D. Bradley Company, agents for builders' supplies.

Toward the end of the chance meeting between John, Sax, and myself, Bill Wills showed up. He seemed in good shape, but aside from admitting the mud cure administered in Exeter by classmate John Kilduff, Bill said nothing which fits into the Spanish decor of this particular dispatch.

Somewhere along in these events obviously comes the bull. Very well, I have another book out, published this January by Harper under the title of *Co-operation and Conflict in Industry*. It is a 250-page effort which, so far as I know, is the first attempt to devise a general theory of co-operation. Some of the things the big wigs have to say on the subject are amazing. Over and over men feel that co-ordinated effort is co-operation. Ever hear of the galley slaves? Or they mistake obedience for co-operation. Or they fail to realize that vigorous opposition can be a high type of co-operation. Mostly they concentrate on what they suppose will be the benefits of co-operation to them, never giving a thought to what the prerequisites are which must be provided before co-operation is possible. There are 30 years of professional experience in the field of human relations in industry behind those 250 pages, and I hope enough sound and solid material to allow others to jump from my shoulders into a more profound and comprehensive understanding of what co-operation is and what must be done before anyone can hope to secure it. — F. ALEXANDER MAGOUN, *Secretary*, Jaffrey Center, N.H.

A note from Larry Gillett says that he has pretty well recovered from his illness of last spring and is enjoying his retirement. He has covered a lot of territory since last spring, but says he always comes back to the two grandsons who live in Wilmington, Del., where their father, M.I.T.'52, is with the DuPont Company, polychemical department.

Bernard Coleman writes that he has another grandchild, Curtis, making five in all. No retiring for Berniel! He is very busy with charitable work and lists some of his jobs: a member of the Board of Directors of the Visiting Nurse Association; on the Board, National League of Nursing; chairman of a Committee on Mandatory Retirement; and treasurer of the Welfare Information Service. He says George Michelson has been visiting in Los Angeles. . . . Ev Doten says that he thinks the 40th reunion was the best ever. He and his wife spent a week in Bermuda after they left Boston.

Blake Darling writes: "After 30 years in the fire insurance business, I moved to a cattle ranch near Carson City, Nev. One son operates the main ranch near Elko, Nev., and one other is working for a Ph.D. in botany at Duke University. I am now practically retired because of arthritis plus a coronary attack. Nevertheless, this ranching is a pleasant life which I enjoy." Address: Empire Ranch, P.O. Box 1090, Carson City, Nev.

Jack Fleckenstein writes that his daughter Joan (Mrs. Charles L. Mizer)'53, has a second child, a boy named Clayton, who is already registered for M.I.T., Class of 1981. . . . Reginald Hunt, of Auburn, Mass., writes that his daughter is finishing her work for a master's at Duke and teaching science in Danville, Va., and his boy is taking premedical work at Duke.

Leslie Jackson writes: "Same old water boy. No changes except a little older." Les is manager of the Little Rock Municipal Water Works, Little Rock, Ark. . . . George Irwin, a retired colonel, is enjoying life at Delray Beach, Fla. He starts his note by saying that he is proud to have 19 grandchildren. He is a Rotarian and keeps active with golf, bowling, and gardening.

Word has been received of the death of Miss Edith Clarke, retired General Electric Company engineer and the first woman to receive an Electrical Engineering degree from Massachusetts Institute of Technology: "During her 26 years with General Electric, Miss Clarke became well known for her original contributions to symmetrical and circuit analysis theory as well as her contributions to the subject of long-distance power transmission.

"Miss Clarke authored or co-authored 17 papers on technical matters. Her work also included a two-volume book entitled 'Circuit Analysis of A-C Power Systems.' Two of Miss Clarke's technical papers won awards from the American Institute of Electrical Engineers. Miss Clarke was the first woman to be made a Fellow in the A.I.E.E., and also the first to be honored as an alumnae member of Tau Beta Pi and Eta Kappa Nu. Her 26 years with

General Electric included service with the turbine division and the former central station engineering section, now the electric utility engineering section. In 1921 and 1922 she taught physics at Constantinople Women's College, Constantinople, Turkey."

Changes of address: Frederick L. Hunter, from Redwood City, Calif., to 422 Davis Street, Evanston, Ill.; Ralston B. Smyth; from Milton, Mass., to Stoney Brook Road, West Brewster, Mass.

Special note to those who are eagerly waiting for the pictures taken at the 40th reunion: Watch the mails carefully. Will Langille promised them by Christmas. Will has been traveling quite a bit and is in fine health.

Contributions to the Alumni Fund are coming in well, and we thank all of you who have sent in your money. We are hoping to hear from more of you before the end of the year. — EUGENE R. SMOLEY, Secretary, 30 School Lane, Scarsdale, N.Y.

Your secretary had the pleasure and privilege of attending the annual dinner of the M.I.T. Club of New York in December at which our distinguished classmate, Al Glassett, was awarded a silver Stein for his "outstanding contributions to the club and to the Institute." Others present at this great occasion were Mr. and Mrs. Harold Smiddy, Mr. and Mrs. George Des Marais, Mr. and Mrs. Phil Byrne, Al Tomlinson, Stan Reynolds, George and Helen Dandrow, and of course the charming Mrs. Glassett. George Dandrow acted as toastmaster and did his usual superb job. Al Glassett made a speech of acceptance which was an eloquent tribute to M.I.T. and what it had meant to him, which had the big gathering standing and cheering for Al. Way back in 1924 Al started as an estimator for the industrial building construction firm of W. J. Barney Corporation in New York. It is hardly necessary to add that in 1951 he was elevated to the presidency of this fine old firm, the post which he now holds. Al's contributions to the M.I.T. Club of New York go almost equally far back and were particularly significant during the great depression of the early '30's. His leadership as club president from 1933 to 1939 was considered the greatest force for club survival. During these years Al was appointed honorary secretary of M.I.T., becoming one of the pioneer group that flowered into the now indispensable Educational Council of the Institute. He has served as Chairman of the Visiting Committee, Civil Engineering Department, as President of the M.I.T. Alumni Association and as a term member of the M.I.T. Corporation. He and Esther live in Bronxville, N.Y. He is a classmate of whom we can all be proud.

A quick glance at the recently issued Alumni Association directory for 1960 gives evidence that our Class is still making itself felt in Alumni affairs, despite its advanced age. Active on the Alumni Council are class representatives Ed Ryer, Perk Bugbee, Al Burke, Jim Gibson, and John Nalle. Ed Ryer is chairman of the

very important Alumni Fund Board and Al Burke and Perk Bugbee are class assistants for the Alumni Fund. Frank Maconi is president of the M.I.T. Club of Birmingham. George Morgan is on the Educational Council for the Beaumont-Port Arthur area. The Alumni Association has had three classmates as its president, including Ed Ryer and Al Glassett. Apologies to any others that I may have overlooked.

Creighton Stanwood, who recently retired after serving as Vice-president of Great Northern Paper Company, has donated an extensive collection of technical books on the paper industry to the Lowell Institute. Creighton is a member of the American Craftsmen's Council and an associate member of the New England Guild of the American Gem Society. He is also a past president of the Lexington Arts and Crafts Society.

A card from Chuck Reed indicates that he has been sojourning in the West Indies, at Nassau and St. Croix. . . . Jim Wolfson is living in New York City at 145 West 55th Street; Jack Coyle is in Fairfield, Conn., address 72 Merton Street; Ed Bigelow has moved from Portland, Maine, to Adelphi, Md.; Ming Pai has left Shanghai and is in New York, address 2421 Webb Avenue, Bronx, N.Y.; Chester Priest is in Nashua, N.H., 270 Lake Street; Dave Brown is in East Orange, N.J., at 377 South Harrison Street. We hear that Ned Murdough is back at his former residence in South Acton, Mass.

Word has been received of the death of Francis Culbertson, formerly of Lexington, Mass., and George Bliss of New York City. No details. The Class suffered a grievous loss in the death of Ned Cochrane, the former Vice-president of the Institute and Admiral in the U. S. Navy. Ned had been attending a meeting of the Society of Naval Architects and Marine Engineers in New York when he was stricken with a heart attack on the train back to Boston. As wartime Chief of Naval Construction, he supervised the building of more than 100,000 ships between 1942 and 1946. After the war he headed the Department of Naval Architecture at M.I.T. and served as chairman of the Federal Maritime Board and as U.S. Maritime administrator, later returning to M.I.T., first as Dean of Engineering and then as Vice-president. Representing the Institute in industrial and governmental relations, he was considered the Navy's top ship designer and he was awarded the David W. Taylor medal for notable achievement in naval architecture. He held the Navy Distinguished Service Medal, was a Knight Commander of the Order of the British Empire and had scores of other civil, professional, and naval honors. He leaves his wife and two navy officer sons.

By the time these notes appear, most, if not all of you, will have received the big news that the 40th reunion will be held at Chatham Bars Inn on Cape Cod. Reunion chairman Buz Burroughs rates the thanks and appreciation of his classmates for the prompt and effective way in which he lined things up after getting the bad news that our old stamping ground, the Sheldon House, would no longer be operating. The situation was mighty tight and we believe it was a real piece of good

fortune for us that he was able to land us the accommodations at Chatham Bars Inn which is a first-class establishment with all the advantages and facilities for a bang-up reunion. Judging from advance indications, we are going to have a mighty fine turnout. For example, Chuck Etter wrote Norrie Abbott all the way from San Francisco that he expects to attend. Sandy Sanders from Virginia is another we expect will be with us, and Dozie Brown from Kansas City is another. All the boys at the New York Club meeting said they would be on hand. Make plans right now to be there in June for the best reunion yet. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

# '21

Last call for our 1921 reunion in Mexico! If you returned the questionnaire from your secretary and indicated interest in attending this unusual gathering of the Class, you now have the comprehensive December letter from Chairman Chick Dubé of our reunion in Mexico committee, covering most of the details of the party scheduled for March 10 through 12 at the 12th annual Fiesta of the M.I.T. Club of Mexico City, with special 1921 events slated for March 13. As of this writing, in early December, 29 couples from outside of Mexico and our two classmates of the M.I.T. club there have indicated their intention of attending. Seven other couples are interested and may attend. If the majority of this group does attend, we will certainly have a tremendous time, vying with those wonderful days in 1958, when the M.I.T. Club of Cuba played host to the 1921 reunion in Havana.

Chick and his committee asked that you answer the December mailing and, if you did, you now have the final program and latest details. We hope you have made travel and hotel reservations by this time and have arranged to take advantage of the spring-like climate in Mexico to extend your trip to some of the attractive spots described in the mailing. If you have not previously indicated your interest in the trip and would like to make inquiries at this date, contact Chairman Edouard N. Dubé at 120 Tremont Street, Boston 8, Mass., or telephone him at Liberty 2-2185. See you in Mexico!

The big national news as we prepare these notes is the history-making good will trip of President Dwight D. Eisenhower and his party of 21 persons, to a dozen or more countries during December. Included in the party is Mrs. Ann Cook Whitman, the President's personal secretary, who is the wife of our own Edmund S. Whitman. Well known as a writer of four novels, the author of many articles appearing in national magazines and a much-sought speaker on Latin American affairs, Ed is vice-president in charge of public relations for United Fruit Company, with headquarters in New York City. He has been with the company since 1921 and is also active as an officer of several Pan-American societies. He is a member of the National Defense Executive Reserve and the Explorers Club of

New York and a Fellow of the Royal Geographical Society of London. Mrs. Whitman has been personal secretary to President Eisenhower since he took office in 1952.

The second generation of 1921 at M.I.T. Club welcomes the addition of George Ronald Thomson '63 of Milton, Mass., to its roster of members. George entered the Freshman class at the Institute in Course XVI — Aeronautics and Astronautics for those of us who haven't learned the names of courses above XV. George is the son of Mrs. Thomson and the late George Thomson. His admission to the select circle makes him one of a group of 60 sons, one daughter and four nephews of 51 members of the Class to have entered Technology. Good luck, George, from all of us.

Philip H. Hatch, Chief Mechanical Officer, Long Island Railroad, New York, gave a paper entitled "Some Multiple Unit Car Problems of the Past, Present and Future" before the Transportation Division of the New York section, American Institute of Electrical Engineers, on December 8, 1959. Phil described problems connected with car equipment and operation in suburban services. . . . John G. Lee, Director of Research, United Aircraft Corporation, and Chairman of the Board of Regents, University of Hartford, spoke on the subject "What is the Future of Connecticut?" on October 19, 1959, at the meeting of the Tarbuth League of Temple Beth Israel in Hartford, Conn.

Robert F. Miller wrote a welcome note to announce the arrival on September 23, 1959, of a granddaughter, Joan Marie Weaver, the second daughter of his and Helen's eldest daughter, Margaret Ann. Our class photo-historian, Bob is industrial engineer in the office of research and engineering, U.S. Post Office Department, Washington, D.C. The Review Editors scooped us in the December issue with the announcement that Augustus B. Kinzel is the recipient for 1960 of the Medal of the Industrial Research Institute. Irv Jakobson, chairman of our 40th reunion gift, reports receipt of a fine letter from Archie L. Mock of San Francisco, who has retired from active business.

Howard F. MacMillin of the MacMillin Hydraulic Engineering Corporation, Skokie, Ill., writes an interesting letter, telling of his forming the company with his oldest son in 1948. From their plant at 7355 North Lawndale Avenue, they serve some of the industrial leaders of the nation with complete hydraulic system assemblies. We had the pleasure of hearing Dave Shepard '26, an associate of our Dr. Stewart P. Coleman among the vice-presidents and board members of Standard Oil Company of New Jersey, when he talked about the Middle East to the M.I.T. Club of Northern New Jersey and showed a series of beautiful colored slides. Joe Wenick, treasurer of the club, and your secretary also attended an Educational Council meeting, addressed by Hugh Darden, executive secretary of the Council at M.I.T.

Maxine and your secretary enjoyed an afternoon and evening at our home with Graciela and Helier Rodríguez during their November stopover in New York, returning to Havana from a six-week European trip. On view were the excellent

slides of Havana which Munnie Hawes recently contributed to our class collection of pictures taken during the 1921 reunion in Cuba. . . . Members of the Class and particularly the Course VI-A group will mourn the loss of our beloved Professor William Henry Timbie, who passed away on October 30, 1959. Bill, the founder with the late Professor Dugald C. Jackson of this first co-operative course in the United States and the staunch friend of our Hexalphas, who formed its first students, was a regular attender at our five-year reunions. He will be missed by all. It is with deepest sorrow that we express sympathy to his family.

Our thanks to the Alumni Association and to the editor of "M.I.T. Alumni Make News — 1959" for the publicity given to the Class of 1921 in the booklet mailed to all Alumni. Says the editor: "Our Alumni do everything," and proves it with Ted Steffian's election to the presidency of the Boston Society of Architects; all the men of the Barriger family in railroading — Jack '21 as President of the Pittsburgh and Lake Erie, son John '49 with the Santa Fe and son Stan '55 with the New York Central; the purchase of four swank Waikiki Beach hotels by Sheraton Corporation heads Ernie Henderson and Bob Moore so the Class of 1921 can have a reunion in Hawaii to follow those in Cuba and Mexico; the announcement of Dave Woodbury's 14th book, "1,001 Questions Answered About the New Science"; and the fact that our Rev. Sam Miller, one of four ministers in our Class, was named Dean of the Harvard Divinity School. The editor challengingly ends this last item with the observation: "The report (1921 class notes) does not say how many Deans the Class has — John T. Rule of M.I.T. is one." At this early stage of researching our files, we can add the names of Dean Jim Cudworth of the College of Engineering, University of Alabama, and Dug Jackson, Jr., former Dean of the College of Engineering, University of Notre Dame. We're still checking whether Dr. Reg Smithwick was Dean of the Boston University College of Medicine. Not to be overlooked are Bob Neyland, University of Tennessee, the acknowledged Dean of college football coaches, and those well-known industrialists, Wint Dean of St. Paul and Andy Deane of Pittsburgh. This amply answers the question.

Garvin Bawden reports a new home address on St. George Street, Duxbury, Mass. Donald S. Cheney receives mail at P.O. Box 1452, Stamford, Conn. Gustav Fredrickson has moved his home to Mt. Vernon Road, Route 2, Southington, Conn. Manuel M. Green lives at 51 Chestnut Avenue, Auburn, Mass. George F. B. Owens is wintering in Vero Beach, Fla., where he can be reached via P.O. Box 3025. Irving G. Smith of our famous group of West Coast architects, says he lives at 16884 S.W. Bryant Road, Lake Grove, Ore. Oliver Williams is now with Horace S. Ely and Company, 43 West Eighth Street, New York 11, N.Y. David O. Woodbury has returned from Maine to his winter home, 85th Street and Gary Avenue, Scottsdale, Ariz.

Calendar of class gatherings: March 10 through 13, 1960, reunion in Mexico City; June 13, 1960, Alumni Day on campus in

Cambridge; June, 1961, 40th reunion and M.I.T. Centennial. We want to know your plans for attendance and urgently request that you complete and return your secretary's questionnaire if you have not already done so. Use the extra day this month for this worthy purpose. — CAROLE A. CLARKE, *Secretary, Components Division, International Telephone and Telegraph Corporation, 100 Kingsland Road, Clifton, N.J.; EDWIN T. STEFFIAN, Assistant Secretary, Edwin T. Steffian, Architect, 11 Beacon Street, Boston 8, Mass.*

## '22

These notes are being written in sunny Buffalo during December, a place recommended for a lovely winter sojourn. Your secretary finds that this Chamber of Commerce job entails speeches, TV appearances, and ribbon-cutting ceremonies by the score. Drop in and see the clippings. Our class report on the Alumni Fund should cause us all to pop a few buttons as each year we are among the high ones in number of contributors and amount contributed. From the list now available, the Class of '22 is also high in total giving. Our addition by the 40th reunion fund will surely help lift the sights of all classes.

Yard Chittick has sent clippings of a famous football player, the son of our classmate Paul J. Choquette. Son Paul at Brown has made the first team of the Associated Press all New England team and the second team of the Associated Press all Eastern team as fullback. Yard also reported that our President, Parke Appel, has recently been in the hospital for an abdominal operation and is now home recuperating. He expects to be back on the job before Christmas. He also mentioned meeting, at the Alumni Council, Bob Brown, Fred Dillon and Warren Ferguson. They were discussing the site for our 40th reunion — from the Norwich Inn in Connecticut to the Snow Inn at Harwichport and Toy Town Tavern in northwest Massachusetts. They would be happy to receive other suggestions. The new address of Porter, Chittick and Russell is 160 State Street, Boston 9, Mass.

Our sympathy goes to Mrs. Randall Hogan and family. Randy died suddenly at his home at York, Pa., on November 21. He had been active in M.I.T. affairs including student councilor service and fund raising. He was in World War I and II, receiving the Legion of Merit and O.B.E. — Officer of the British Empire. He had two brothers in Boston and 11 grandchildren. Randall, Jr., and his wife are both M.I.T. graduates. Our sympathy also goes to the families of Carl L. Flory of Los Angeles and Philip C. Stevens of El Paso, Texas. We also regret the passing of Albert H. Clark of Attleboro, Mass. Al was associated with the General Electric Company of Lynn and is survived by his family and five grandchildren.

Compliments go to C. George Dandrow, who was toastmaster at the annual dinner and Silver Stein presentation for the M.I.T. Club of New York at the Biltmore on December 2. . . . Warren Ferguson has moved to 16 Fairbanks Road, Lexington,

Mass.; Roland H. Becker to Milwaukee; Walter E. Lennon to Adams, Mass.; Nathan H. Weed, Jr., to Salisbury, Md.; John P. Livadary to Great Neck, N. Y.; and, Clinton B. F. Brill, De Leuw Cather and Brill, to 220 East 42nd Street, New York 17, N.Y. Thanks to Fred Dillon for sending the information. Best wishes to Parke for a speedy recovery. — WHITWORTH FERGUSON, *Secretary, 333 Ellicott Street, Buffalo 3, N.Y.; C. GEORGE DANDROW, Assistant Secretary, Johns-Manville Corporation, 22 East 40th Street, New York 16, N.Y.*

hensive discussion of technical advances on the railroads and also for his frank discussion of the commuter situation.

A notice from the *Salt Lake Tribune*, November 20, 1959, advises that Norman L. Weiss, milling engineer of the American Smelting and Refining Company, has been elected chairman of the Utah section, American Institute of Mining, Metallurgical and Petroleum Engineers. He succeeds Glen A. Burt, of the International Smelting and Refining Company.

Our genial classmate, David W. Skinner, Vice-president and general manager of the Polaroid Corporation, was the guest speaker at Haverhill Industrial Management Club on Wednesday, October 7. Dave is now a resident of Waban. He is a former president of the Waban Improvement Society, a director of the Cambridge Chamber of Commerce and the Newton Y.M.C.A. He is a member of the Nichols Junior College Advisory Council, the American Management Association, the Waltham Chamber of Commerce and the M.I.T. Alumni Council.

We are indeed sorry to report the following deaths and wish to express the sympathy of our Class to surviving members of their families; Nelson Burtt, Waldo Fox and Jean Lepicier. Nelson Burtt was briefly mentioned in last month's notes, but I would like to add some more details. Nelson was an engineer in the Foxboro Company, a member of the Unitarian Church, Sharon, Mass., and of the William North Lodge A.F. & A.M. of Lowell. He was also a member of the American Society of Mechanical Engineers. He is survived by his wife, one son, William H. Burtt of East Hartford, Conn., and one brother.

A note from Minerva Fox, addressed to our class President Bondy provided the sad news that Waldo had died suddenly on October 16 from a coronary. He lived in Fort Smith, Ark., and is survived by his wife and one daughter. . . . Jean Lepicier died on November 11, 1959. Jean was a member of Course II, and also a member of the Theta Xi fraternity. His address was 33 Avenue Jean Jaures, St. Muir des Fosses, Seine, France.

The following address changes have been reported: Charles T. Burke, General Radio Company, West Concord, Mass.; Forrest G. Harmon, Tubesales, 2211 Tubeway, Los Angeles 22, Calif.; C. Sumner McCann, P.O. Box 564, La Jolla, Calif.; John J. Murphy, Apt. 1104B, 200 East 66th Street, New York 21, N.Y.; George F. Nevers, 755 Ellington Road, South Windsor, Conn.; Herman Swett, U.S. Department of the Interior, Bureau of Commercial Fisheries, Emerson Avenue, Gloucester, Mass.; H. H. Zornig, 706 Coral Way, Coral Gables 34, Fla. — HERBERT L. HAYDEN, *Secretary, E. I. du Pont de Nemours and Company, Leominster, Mass.; ALBERT S. REDWAY, Assistant Secretary, 47 Deepwood Drive, Hamden 17, Conn.*

## '23

Howard and Mrs. Russell entertained José Ledesma and his sister Marie on Thanksgiving Day. They are the children of Ernesto B. Ledesma, II. José is still working for IBM and his sister is on a round-the-world trip. José drove his sister up to M.I.T. so that she could see the magnificent institution that it is and take some pictures back to her father.

The annual dinner dance of the M.I.T. Club of New York was held at the Hotel Biltmore on Wednesday, December 2. Several members of the Class of 1923 were in attendance, including Alan Allen, Shorty Chamberlin, Mr. and Mrs. Joel Y. Lund, Mr. and Mrs. Edward McSweeney, Mr. and Mrs. Albert J. Pyle, Mr. and Mrs. Philip C. Smith and Howard Russell. Howard Russell sent me the note concerning this meeting in which he tried to find Francis L. Cronin, who was scheduled to be there. Also, at the same meeting, was Douglas Haven'52, who is the son of our Franklin K. Haven. He is one of Lobby's assistants in the Alumni Association Office. Howard reports that Lobby and his Mrs. were there in their usual fine form, and he wonders how Lobby can remember everybody's name. Of course, the *piece de resistance* was the address by our classmate and M.I.T. President, Julius A. Stratton, on the subject "The Next Hundred Years at M.I.T." Howard hastens to remark that it is his conclusion that all of us of the Class of 1923 were born too soon. Another prominent member of our Class, Alfred E. Perlman, President of the New York Central Railroad, telegraphed a cordial greeting.

On October 20 a dinner was given in honor of Howard Russell by the White Plains Rotary Club when he retired as president of this organization. Howard advises: "In the skit which was part of the entertainment, the Commissioner of Public Safety, the Mayor and the County Executive lampooned me and I ended up with a police record a yard long, a diamond pin, and a beautiful telescope — the latter will be very handy when I return to retire to the hills of New Hampshire two years hence."

Alfred E. Perlman was the guest speaker at the fall meeting of the M.I.T. Club of Northern New Jersey, which was held at the Hotel Suburban in East Orange, N.J., on October 12. Mr. Perlman is recognized as one of our country's leading railroad men. A note from Carole A. Clarke, Secretary of the Class of 1921, states that he was an excellent speaker and received enthusiastic applause for both his compe-

## '24

Dick Lassiter phoned one afternoon in December, just as he was heading out from Boston. He'd been up consulting

with Godfrey L. Cabot, Inc., on the plant where they turn out white soot. It was the day before our class luncheon in New York, a Christmas binge at the Lawyer's Club, so I can't report in this issue how that went off. Dick did say, however, that he and Bill Correale, among others, attended the wedding of Ed Wininger's second daughter (that must be Clementine) on the 12th. A very gala affair.

By the way, before I forget it again: who left a copy of our 25-year book at Oyster Harbors? Someone who brought it along to prime himself on family histories forgot to take it home again. If I get more than one claimant we'll hold an auction — those books are now collector's items.

The MacCallums did not spend this Christmas in California. With a lot of business in the east and a daughter at Katie Gibbs in Boston, both Bill and Eleanore had a New Jersey holiday instead. Bill was in New York in time to join a good many other '24 people at the Silver Stein dinner in November. Among them: the Cardinals, Correales, Hills, Kiness, Schoolers, Sheirys, Stevens and Winingers, also Austin Cooley, Elko Honigman and, at another table, Jack Hennessy.

From Paul Cardinal comes news that his son John (M.I.T.'56) has given a ring to Miss Carol Johnson, daughter of the William F. Johnsons of Pompton Lakes, N. J.: "Her father is a lawyer, so the deal will be that I keep him supplied with vitamins and he keeps me out of jail." Wonder if he has also planned things so he's brought a doctor, a dentist, and other people essential to everyday living into the family? Paul, Jr., gets married January 30, but there's no word of side benefits here.

The Warren Hills popped into your secretary's office just before Thanksgiving. They were up to spend the day with Warren's mother just outside of Boston. Warren's management consulting is evidently blossoming. Of course he welcomes the rush of business, but it's keeping him on the go more days than the week provides. . . . Haven't heard of, or from, Johnnie Grabfield for ages, but all of a sudden his name appeared on the roster of those attending the New York beer party last fall. Seems that Johnnie is now working with Nate Schooler, but we'll have to wait for further advice to be more specific.

Walt Gress is turning pro! After 35 years as an engineer, he is at last applying for a professional engineer's license in New Jersey. It would almost seem after that length of time that his experience would be the determining factor, but no, the Board required a transcript of his college record away back in 1924. Do hope it didn't show a deficiency (or failure) in PT or ROTC. . . . H. Gregory Shea has been upped from assistant to associate manager of, and here's a title, "the industrial properties division in the city mortgage department of The Equitable Life Assurance Society of the United States."

Here's another classmate who has kept out of the news for a long time. Was a time when he was reported with regularity. Under the heading "Labor Official To Talk" comes a news item that David

Lasser, director of research and economics of the International Union of Electrical, Radio and Machine Workers, was to speak at a dinner in East Orange on "Labor Looks at the Industrial Engineer." Doesn't say whether or not he would look with a jaundiced eye.

Since 1925 William L. Rowe has been with Johns Manville in their building products division in New York. Bill has now retired and of course he's gone to Sarasota, Fla. One last item on our senior V.P.: Hoffmann-LaRoche's public relations department sent out a release in November accompanied by a beamish picture of V.P. Cardinal accepting an award. It was made to the company by the N. J. Science Teachers Association "in recognition of outstanding assistance in the development of more effective classroom science teaching." A very worthwhile endeavor in which more companies could profitably engage. So much for now. Back again next month.—HENRY B. KANE, *Secretary*, Room 1-272, M.I.T., Cambridge 39, Mass.

## '25

As the result of an experiment being tried by the Alumni Association this year, a small reunion of the Class occurred on Monday, November 30, 1959. As Council representative of the Class, your *secretary* was asked to bring five classmates to the monthly meeting of the Alumni Council. On short notice we rounded up Arnold Bailey, Dave Goldman, Mac Levine, Clarence Thulin and Frank Turnbull. Fred Greer is a regular member of the Council, representing the Jacksonville, Florida, club; and the seven of us had a most enjoyable evening. Ave Stanton who represents Baltimore was tied up with planning board activities in Natick or he would have been on the job as usual that evening. Also active on the planning board with Ave is George Balcom, VI.

The directory of the Alumni Association in 1959-1960 indicates a number of '25ers are active in various ways in the interest of M.I.T. I am sure all of you realize that Ave Stanton is a member of the Alumni Fund Board; while Fred Greer and your *secretary* are on the committee covering nominations for department visiting committees. Of the many M.I.T. clubs, George Conway is president of the Albany, New York, club; Charlie Billman is president in Dayton, Ohio; Ben Oxnard is president of the Rocky Mountain club; Bob Ashworth is honorary president of the Fall River club, while Ben Hampshire is the president; and "Bed" Groenewold has just been elected vice-president of the M.I.T. Club of Oklahoma. It was my pleasure to meet with this club and to be introduced by Bed as the speaker at a meeting in November.

A newspaper clipping from the Salem, Mass., *News* tells of E. W. Gardner's speech at the North Shore chapter of the National Association of Accountants on the subject, "Paperwork and Cost Controls in the Field of Distribution." He has been methods manager at the Boston mail order plant of Sears Roebuck and Company for nearly 25 years.

An address change indicates that Henry Chippendale, who has been for some time located on the Island of Aruba, Netherlands West Indies, is now residing at Litchfield, Conn. We have no other information as yet. . . . A small clipping from the General Motors *Engineering Journal* notes that Harry Karcher, chief of field service department, has had a patent issued for an afterburner fuel injection system.

Percentagewise, it appears that classmates in foreign countries are reporting on their reunion intentions at a higher rate than the domestic group. Pierre Wibaut has written saying he is sorry he will be unable to join us at the 35th reunion but wishes us complete success, and sends best regards to all members of the Class. Those of you who have not responded to Fred Greer's letter, please take action! — F. L. FOSTER, *Secretary*, Room 5-105, M.I.T.

## '26

Here we are at Pigeon Cove for the weekend and my folder labelled "class notes" is in my brief case in the office — so let's see how we make out. I cannot even fill up space with small talk about the weather here because it's just an overcast, foggy, uninteresting morning. I'll have to rely upon memory. One thing that comes to mind is a little white slip from the Alumni Office telling of the death of Bob Moir last fall. I remember Bob from our Freshman year but do not recall seeing him after that. He was listed in the Alumni Register as a Civil Engineer, Metropolitan District Commission, living in West Newton, Mass. . . . I also recall that there was a very unusual Christmas card in the office from Barney Gruzen — it was blue print color and format with a bold greeting hand scripted across the face — a most interesting card.

The other day I received a phone call from Cecil Ogren. Cecil is in the process of building a large summer cottage at Ipswich, Mass., with his own hands plus the hands of his two sons. Ipswich, as the sea gull flies, is only five or six miles from here across the bay but around the shore it must be nearly twenty. Cecil is now chief of the engineering division at the Watertown Arsenal where a major project is the Jupiter missile launcher. Consequently, Cecil is spending nearly half of his time at Huntsville, Ala. Even though the file is back in the office, we have a clipping here from the *New York Times*, which tells of the engagement announcement of Pete Doelger's daughter, Charlotte, to a chemist, no less. Charlotte graduated from Wellesley in 1953 and having known her since she was a tiny girl up through her years of small boat sailing. I am naturally pleased at the news. The prospective bridegroom, Francesco Bonmartini, has a doctorate from the University of Rome and is now with Esso Research at Linden, N.J. He is the son of Count and Countess Bonmartini of Rome.

It's really fortunate that I have so few clippings this morning because I have several projects on the fire. I told you that I have been trying to make some

picture frames and that I have turned out to be a pretty poor craftsman. When I try to miter the corners they don't seem to want to meet — then the frame comes out too big or too small for the picture. Consequently, I find myself resorting to new methods and now I am trying to make frames from plastics of various types. The idea is to mold them in one piece so you can forget the mitered corners. I have made a couple of prototypes and don't like the looks of my effort a bit — hence, I'm on my way shortly to visit one of my artist friends to get a bit of advice. This is developing into an unusual type of hobby but thus far it's interesting. Does anyone read this stuff? If so, how about a note from you? The file in the brief case back in the office is really pretty thin and if we depend upon clippings alone we write about the same people all the time. We are sure the Class would like to know what you are doing. How about it? — **GEORGE WARREN SMITH, Secretary, c/o E. I. du Pont de Nemours and Company, Inc., Room 325, 140 Federal Street, Boston 10, Mass.**

## '27

We regret to advise of the recent death of Gerald B. Yudkin. After graduation Gerald worked for Kelvinator in Bridgeport for two years. From 1929 through 1931 he was ill with rheumatic fever, but after recovering founded the Central Waste Products Company in Ansonia. Two years later he became a partner in Eastern Automotive Parts Company, with headquarters in New Haven. He was president of this organization at the time of his death. He was a well-known and much admired member of our Class.

Pub (Charlton P.) Whittier, manager of customer service, packaging research division of Owens-Illinois Glass Company, Toledo, showed up in New York. Jim Lyles, Pub, our wives, and I spent a pleasant evening together. Pub is a national authority on packaging problems and has been in this field during its tremendous growth over the past 20 years. — **J. S. HARRIS, Secretary, Shell Oil Company, 50 West 50th Street, New York 20, N.Y.**

## '28

Fitch Briggs, VI-A, in a note to Jim Donovan, reports that his two older children, Dorothy and Albert F., Jr., have finished college, while the youngest, Robert, is just starting. The older son is now working in New York City and lives in Larchmont. Fitch and his wife Dorothy live in Beaumont, Texas. They had a fine vacation this year visiting the national parks in Utah, Arizona, and New Mexico, including Zion National, Bryce National and the north rim of the Grand Canyon. But it is obvious that Fitch is a real Texan — no other state can compare with his!

We have also had an excellent letter from Lou Miller, XVI. Lou is still with Douglas Aircraft, Long Beach, Calif., and lives in Whittier, Calif. Lou and his wife

Violet toured the U.S. and Canada for a five weeks' vacation during September and October and also visited with their daughters and with Lou's folks. Daughter Carolyn graduated from Pomona in 1956 then spent two years at Yale Divinity School. On September 13 she was married to Rev. James Lemon, a Yale Divinity School graduate, who is now serving as minister for three small churches of the United Church of Canada, near Iron Bridge, Ontario. The young couple now have a daughter, Margaret Ann, born September 12 last. Daughter Marjorie attended Ohio Wesleyan University and now lives in Jackson Heights, Queens, N.Y. While in the Boston area the Millers visited Ralph Jope and Augustus Rogowski at the Institute; Ford and Ann Tibbets in Reading; and Ed Jenkins'16 and his wife Julia in Swampscott.

Lou also reported that he and Violet attended the wedding on August 2 in Orange, Calif., of Barbara Haas and Richard Tooley, son of our good classmate Doug Tooley, XVI. Lou was usher at this wedding just as he was usher when the elder Tooleys, Doug and Florence, were married back in 1930. Doug is now an engineer at Republic Aviation Corporation on Long Island. Son Dick not only graduated from the Institute in 1954 but went on to get his Ph.D. degree in Geophysics in 1958. He is now a research physicist at California Research, La Habra, Calif. The young Tooleys are living in Whittier. Carl Svenson'31 and his wife were also at the wedding. Carl is with Lockheed Aircraft Corporation in Burbank.

We regret to report that George P. W. Black, XV, died of a heart attack on December 12, 1958. This news was only recently received from his wife, Helen. At the time of his death George was district manager, Bottled Gas Corporation of Virginia in Fredericksburg, Va. — **GEORGE I. CHATFIELD, Secretary, 11 Winfield Avenue, Harrison, N.Y.; WALTER J. SMITH, Assistant Secretary, 15 Acorn Park, Cambridge, Mass.**

## '29

We had a small get-together late in November at the November meeting of the Alumni Council. Local members of the Class were invited to the council meeting along with members of other classes, 1921 to 1930. Those attending were John Wilson, Eric Bianchi, Bill Baumrucker, Paul Donahue, Ed Farmer, Wally Gale, Gordon Williams, and yours truly. Unfortunately, Frank Mead was in Pittsburgh at the time and missed the meeting.

John and D. A. Wilson had just returned from a wonderful week's stay in the Caribbean. Eric and Kay with Wally and Joan are planning two weeks of sun in Sarasota early in March. The girls are going to take a leisurely drive down, and the boys are flying down and meeting them there. Wally reports his son Tom is at Harvard getting his master's. Tom plans to teach social science after finishing at Harvard. Joanny Gale (Jr.) has been in an "off Broadway" show recently and is thrilled, of course. Wally had dinner

with Jose (Joe) Ferre who is in town with his wife — Joe is in Havana.

Eric Bianchi tells me that his son David, who has been with Minneapolis-Honeywell here in Boston, has been transferred to California. . . . I talked with Frank Mead this morning to ask how the Alumni Fund is coming, as far as the Class of 1929 is concerned. Frank has the following remarks to make:

"During our most pleasant 30th reunion at Bald Peak, John Wilson, our then Alumni president, reminded us that there have been many changes in the Institute in the intervening years. When we entered the Institute our tuition was \$300, and in our last year our tuition was \$400. Today, as many of you undoubtedly have read recently, the tuition is \$1,500. On the surface it would appear that the student of today is paying his way, but this is just not so because the yearly cost to the Institute of educating an undergraduate is now more than \$3,100. So you see, just as the Alumni of the Twenties helped pay your way and mine through the Institute, it is now necessary we be equally loyal in helping the current student body. With M.I.T.'s outstanding position in the world today, it is more important than ever that the Institute get adequate support. Last year more of us gave more money than in preceding years, and for this the Institute is grateful, but it is clear that the increases in total giving as well as in average gifts have not kept pace with the increases in our incomes, inflationary trend, and with the Institute requirements. This is the way our gifts were distributed:

\$	1929
4	1
5-9	23
10-24	89
25-49	65
50-99	24
100-499	8
500-999	1
10,000	1
19,951	232

Maybe if you were to appraise your current position in the light of the current need for support to the Institute, you may be one who will deem it proper to increase your gift to the next higher bracket."

Let's get behind Frank and the Class. — **FISHER HILLS, Assistant Secretary, 62 Whittemore Avenue, Cambridge, Mass.**

## '30

We are very pleased with the response we have received to our first letter regarding our 30th reunion, but we hope that those of you who intend to, but have not yet done so, will drop your card in the mails immediately. At this writing (two months before these notes go to press), we have received 107 replies which indicate a definite interest in this reunion.

Ken Bucklin tells us that he has been with RCA for 27 years. His present job with this company is as manager of engineering, receiving tube operations, Har-

rison, N.J. He has been living in Short Hills, N.J., for 20 years, has a daughter, age 19, who is a sophomore at Kent State University in Kent, Ohio, and a daughter, age 17, who is a senior at the Millburn High School in Short Hills. . . . Ted Bridge is working on a high energy cyclotron at Oak Ridge, Tenn. . . . Colonel Homer Davis' present assignment is as signal officer, Headquarters, 6th U.S. Army, Presidio of San Francisco, Calif.

Pablo DeJesus sent me a note from Manila, Philippines. He is happily married, and has seven children and one grandson. His present positions are as vice-president and treasurer, Prudential Bank and Trust Company; board member of the National Waterworks and Sewerage Authority for the Republic of the Philippines; and director of the Rizal Surety and Insurance Company of Superior Feed Mills, Inc., and of Lirag Textile Mills. He has published more than 50 papers on public health and related subjects, and holds memberships in many scientific and other organizations.

Sid Kaye is still working evenings at the Beth Israel Hospital, where he prepares male patients for surgery (3500 people so far). To quote Sid: "I also double in brass as President of Parker Hill Medical Centre. This is all because of my scientific background." We learned recently by way of a newspaper clipping that Sid was chairman of the dinner in honor of Mrs. Eunice Kennedy Shriver, Vice-president of the Joseph P. Kennedy, Jr., Memorial Foundation. This dinner was held last November at the Sherry-Biltmore Hotel in Boston. . . . Sven Lawson writes that he has finally returned to this area after a 10-year absence. His business address is: Sylvania Electric Products in Woburn, Mass., where he holds the position of manager in the conductor division.

Sid Linderoth was recently promoted to director of research engineering with the central research and engineering division of the Continental Can Company in Chicago. His daughter Janet is now in Germany, studying at the University of Munich. She will spend her junior year there and then return to finish at Middlebury College in Vermont, where she spent her freshman and sophomore years. His younger daughter Marilyn is now in her junior year in high school, and hopes to attend one of the eastern colleges when she graduates. She is very interested in music and is becoming a fine pianist. Sid is very proud of his two girls, and well he should be. He is looking forward to our 30th reunion next June, as he is sure are all our other classmates.

For the last 25 years Doug MacDonald has been with the London Life Insurance Company of London, Canada, and in the role of manager for the last 19 years. We all look forward to seeing Doug at our 30th reunion. . . . Sometime during the fall of 1958, Hijo Marean decided that 28 years of working for someone else was enough, so he went to night school and got his insurance broker's license. Then in March, 1959, he and his wife Eleanor opened a real estate and insurance agency (called The Mareans) in Marblehead. Hijo says it has been hard work, but a lot of fun, getting started, and he is happy to say that to date they have been successful

beyond their best expectations. Last June his son David and daughter-in-law Judy presented him and Eleanor with their first granddaughter, Michele. Hijo's daughter Carol was married last August to B. William Shoemaker, and the couple is living in Marblehead. His other daughter Linda is a junior at Connecticut College in New London, Conn.

We have the following changes in address to report: M. Maxwell Bower, Bell Telephone Labs, Inc., P.O. Box 1738, Vandenberg AFB, Calif.; Edgar M. Hawkins, Jr., 84 Five Mile River Road, Darien, Conn.; Horace B. Preble, 169 East Avenue, Woodstown, N.J.; Thomas F. Wieczorek, 1310 Margarete Avenue, Towson 4, Md.; Homer L. Davis, Jr., 454 Funston Avenue, San Francisco 18, Calif.; William R. Perret, 6116 Natalie N.E., Albuquerque, N.M.; Major General Charles K. Gailey, Military District of Washington, Room 1537, Building T7, Washington 25, D.C.; George M. Houston, Jr., Apt. 717, 554 South Summit, Fort Worth 4, Texas; William W. Thomas, 2 High Road, Newbury, Mass.

Class members will be saddened to learn of the death last April 24 of James G. Muir. On behalf of the Class we would like to extend our deepest sympathy to Jim's family. — GEORGE P. WADSWORTH, Secretary, Room 2-367, M.I.T., Cambridge 39, Mass.; RALPH PETERS, Assistant Secretary, 249 Hollywood Avenue, Rochester, N.Y.; LOUISE HALL, Assistant Secretary, Box 6636, College Station, Durham, N.C.

## '31

One of the very pleasant things about being your class secretary is the opportunity it affords me to keep up to date on the activities of our classmates as they advance to greater and greater success. A few months ago, our class proxy, Howard Richardson, changed jobs for the first time in over 25 years to become Executive Vice-president of the Stanley Works in New Britain, Conn.

This month, a very welcome note from another classmate, Vice Admiral C. E. Ekstrom tells of his new assignment as COMNAVAIRPAC, the abbreviation for Commander Naval Air Force, U. S. Pacific Fleet. In his letter, Admiral Ekstrom mentions: "I am responsible for the equipping, training, and readiness of all the Naval aviation activities in the Pacific area. This includes carrier squadrons, carriers, tenders, land-and-sea patrol planes and transports to support them. It is an interesting job with many ramifications greatly concerned with maintenance and operational engineering which keeps all members of my rather large staff very busy." Admiral Ekstrom's address is Commander Naval Air Force, Pacific Fleet, North Island Naval Air Station, San Diego 35, Calif. It is good to know that our safety is in such capable hands.

Word from the Alumni Register tells of the following address changes: Rear Admiral Cato D. Glover, 2052 South Dixie Highway, Coconut Grove, Miami 33, Fla.; Herbert E. Raymond, Jr., 101 Old Mamaroneck Road, White Plains, N. Y.; Howard L. Richardson, The Stanley Works,

195 Lake Street, New Britain, Conn.; Morley G. Taylor, P. O. Box 250, 244 St. James Street, W., Montreal, P. Q., Canada; Colonel Henry R. Westphaling, G4 Div. Hq., USAREUR, APO 403, New York, N. Y.; and Meyer P. White, 157 Clark Road, Brookline 46, Mass. — EDWIN S. WORDEN, Secretary, 9 Muron Ct., Westport, Conn.; GORDON A. SPEEDIE, Assistant Secretary, 90 Falmouth Road, Arlington 74, Mass.

## '32

News has been so sparse arriving at my my office lately that I have had to go out and become a roving reporter. On the weekend of November 21, my wife and I were entertained by Juan Serrallach, XV, and his family in Barcelona. We have never been in so many luxurious Spanish eating and drinking establishments, nor covered so much territory on foot, by auto, and by word of mouth in one weekend! What a wonderful host and hostess the Serrallachs make! Juan has a very fine chemical manufacturing business specializing in products for household and industry. The household phase of it has grown very large, with chemicals put up in the form of aerosols, liquids, or powders in easy-dispensing containers. You should see the beautiful home he has, see his collection of paintings (all done by himself), and hear him play the piano and accordion! I can recommend a stop-over in Barcelona to see the Serrallachs.

Howard F. Carver, XV, has recently been elected to the position of vice-president and assistant general manager of the Gleason Works in Rochester, N.Y. Howard has been with this company, one of the largest precision tool manufacturers in the world, since 1934. . . . Thomas B. Rhines, IX-B, has been promoted from chief engineer to assistant engineering manager of the Hamilton Standard Division of United Aircraft. Tom has been very active in civic affairs in Glastonbury, having served on the Board of Education, several school building committees and presently as president of the library.

Here at M.I.T. each department has a visiting committee. I usually think of these men as peers of the realm of an older generation. It is pleasant to note that Bennett Archambault, XV, has been appointed a member of the Corporation Visiting Committee for the Department of Electrical Engineering, but distressing to realize that we in the Class of 1932 are becoming members of the "older generation." . . . Richard M. Stewart, XVII, has just been made chief executive officer in addition to his duties as president of the American Brass Company. . . . Charles H. Martin, II, dropped in to see me. He is now insurance manager for American Cyanamid Company.

Somebody said that we are mentioning quite a few of our "big shot" classmates and not many of the others. The reason is that the former have wonderful press releases on many of their activities while the rest of you are loath to write. I have said this before, and Bob Semple said it for five years, too, so it is up to each one of you to keep me posted. My cousin, Carl

Wahlstrom, IX-B, writes to me at least every Christmas so I can learn of his whereabouts. He is one of our regional vice-presidents and has been trying to get the 22 classmates who are in the Houston area, or at least in that part of Texas, together for a dinner. He did manage to have a dinner this past year, but only four people turned up, including Thorndike D. Howe, Jr., XVI, Carl A. McKinney, V, Dana Price, VI, and Carl Wahlstrom. He brought along the big class reunion picture and pointed up some of the things which the fellows missed at our 25th. Activities like this can certainly build up our morale for the 30th reunion. Dana Price is a partner and chief engineer for Golemon and Rolfe, Architects and Engineers, in Houston. He is working on commercial buildings, schools, and banks. He is married and has four children. Carl reported that for sports Dana plays golf and runs distance, with a little swimming in the summer. . . . Carl A. McKinney is a sales engineer with Keith Air Conditioning Company in Houston, designing central air conditioning systems. Previous to that he was with the United Gas Corporation for many years, doing research and development in gas air conditioning systems. . . . Thorndike D. Howe, Jr., reports that he is "one Course XVI student with his feet on the ground, i.e., in the mud." He does industrial and commercial construction as owner of T. D. Howe Construction Company in Houston. . . . Carl Wahlstrom is with Humble Oil and has been working on programming the analog computer which Humble has purchased. Carl is a member of the American Association of Cost Engineers. Life in Texas may be tough, but Carl goes to Colorado for a couple of weeks in May for trout fishing and then stays home for some duck and goose hunting for two weeks in November along the Gulf Coast.

Getting back to my trip, I spent three weeks in October in Vienna as a consultant for the International Atomic Energy Agency giving out radioactive wastes disposal research contracts. It was my good fortune to be in Monaco for a week as a representative of the agency to the International Conference on Radioactive Wastes Disposal. My wife and I were also able to work in weekends in Paris, Athens, and Rome, as well as Barcelona. There is a great future ahead for the International Atomic Energy Agency in helping many of the underdeveloped countries in their proposed nuclear power programs. There is so much to be done in teaching these countries the many public health problems associated with radioactive wastes disposal. I shall be called upon to assist in this program and just received a letter from the deputy director general asking: "when can we fit in another visit to Vienna or anywhere else in the world where we think research on wastes disposals should be conducted?" — ROLF ELIASSEN, Secretary, Room 1-138, M.I.T.

'33

Because these notes are being written only a few days before Christmas, they will be brief, with apologies. Some mem-

bers of the Class sure get around: had a card from Ellis Littmann from Hong Kong. Ellis and Roslyn are "doing" a good piece of the Orient, combining business and pleasure. . . . Speaking of getting around, Vivian V. Drenckhahn, VII, has moved from New Delhi to Minnesota. Vivian is with the World Health Organization and served in Europe before going to India. . . . Louis D. Alpert, III, has moved west from West Orange, N.J., to Chicago. Lou is with American Smelting and Refining. (See your 25-Year Record for further news of Lou.)

We regret to report the death of Arthur Wolf in May, 1959; he had done graduate work in Chemistry with our Class. Art had been serving as special assistant to the director of defense mobilization and was well versed in matters relevant to the rubber industry. Art is survived by his wife and three children.

Bill Huston spent a day in Cambridge recently interviewing men for work with National Aeronautics and Space Administration. Bill was in fine fettle. . . . We see by the M.I.T. Club of New York news that Garb Garbarino and Phil Rutledge are working actively on the club's technical seminars. Garb is general chairman; Phil chaired a recent meeting on "Atomic Wastes Disposal."

Cal Mohr, our special Midwest correspondent, reports that Ing Madsen's son is a sophomore at Virginia Military Institute and that Ing is enjoying life in Pittsburgh. Cal also reports through a mutual acquaintance that Mal Mayer has business operations now in Brazil. . . . Dick Morse returned to the Boston area for a weekend recently and looks as young and chipper as ever, and 10 pounds lighter since he started carrying a piece of the Pentagon on his shoulders. Drop in, boys and girls, when you get anywhere near the M.I.T. campus. — R. M. KIMBALL, Secretary, Room 3-234 M.I.T.

'34

This is a rather novel experience—supplying class notes after 25 years, and wishing you all a Happy Valentine's Day before Christmas. Perhaps this chore won't be too difficult, however, thanks to the excellent help of Mal Stevens.

It is with extreme sorrow we report the deaths of Marvin J. and Ruth Silberman. The only information we have is that they were in the Piedmont Airline crash in Virginia on October 30, 1959. We send the survivors of their family, in particular their children, Janet and John, all of our sympathy. Marvin attended our 25th reunion last June and showed himself to be a man of many interests. He was an enthusiastic member of our Class and of the Technology family.

The other day a letter from George Bull came along to Mal, and rather than trying to make improvements, here it is in full: "I came to Frankfurt, Germany, to be in charge of the science office in the Frankfurt Consulate General. We arrived in July after a pleasant trip on the United States and a drive across northern France. I will be traveling a good bit in Germany, but will probably take some

leave and go further afield. I am working in the program that has set up the scientific attachés. The one for Germany is in the Embassy at Bonn and is the distinguished professor of inorganic chemistry from the University of Illinois, Dr. Ludwig F. Andrieth."

Norman Krim, as well as doing an outstanding job at Raytheon, has been elevated to head man as "fair share" chairman of the 1960 United Fund Drive in the Raytheon Company. You will also be interested to know that he has been a member of the Board of Directors of the Newton Chamber of Commerce and a member of the Budget Committee of the Newton United Fund. He lives with his wife and three sons on Fox Lane in Newton Center.

The Ethyl Corporation announced recently that William G. Ball, Jr., had been appointed assistant director of public relations. In addition, he is a trustee of the village of Larchmont, N.Y., where he and his family make their home. Bill has joined a few groups in his time and is a member of the American Management Association, the Society of Automotive Engineers, the Public Relations Society of America, the American Petroleum Institute, the Chemists' Club and the M.I.T. Club of New York.

If any of you have need for high legal talent in the field of employee benefit plans, this is to let you know that Joseph L. Seligman, Jr., opened his own law office in San Francisco last July. Please feel free to stop in and consult. . . . David R. Tashjian has received an honorary doctorate of science degree from Western Michigan University. We hope he will let us know more of the details about how he earned this honor.

Warren Towle sent along a short note, and so that we can keep up on his travels, here is a recent account of the Towles' trip to San Francisco: "I'm writing this from our room in the Sheraton-Palace Hotel after Lois and I got back from an evening's entertainment in San Francisco's famous Chinatown. We are here for the annual meeting of the American Institute of Chemical Engineers. To make the occasion more eventful, we left a couple of days ahead of time, took the plane to Los Angeles, where we rented a car, and then drove up along the coast. Since you are already aware of my orchid collecting hobby, you'll understand that I had to take three hours in L.A. to visit a fellow orchid raiser and mooch a dozen or so divisions from some of his plants. The drive up the coast (with the box of orchid plants) was most spectacular—requiring about three rolls of film to do justice to the scenery. And now Lois has already spent two afternoons shopping in Chinatown and elsewhere, collecting things to add to the orchid plants to take back with us on the plane. We will have a lot to remember, if we ever manage to get it all home."

Harold E. Thayer, one of our secretaries, was promoted recently to the position of Executive Vice-president of Mallinckrodt Chemical Works, as well as becoming a member of the newly formed executive committee. It may be of interest to you to know that the following is a complete list of officers and addresses for

the Class of 1934 as it appears in the annual directory for 1959-1960. President, Henry B. Backenstoss, c/o School of Engineering, American University of Beirut, Beirut, Lebanon; Vice-president and Special Gifts Chairman, Carl H. Wilson, 124 Neshobe Road, Waban; Vice-president, Frank R. Milliken, Contentment Island Road, Darien, Conn.; Secretaries, Malcolm S. Stevens, Room 1-139, M.I.T., Cambridge 39; James P. Eder, 1 Lockwood Road, Riverside, Conn.; G. Kingman Crosby, Longwood Road, Huntington, W. Va.; Harold E. Thayer, 415 West Jackson Road, Webster Groves 19, Mo.; Treasurer, W. Leslie Doten, 32 Commonwealth Park, Newton Center 59; Class Agent, W. Randolph Churchill, W. T. Grant Company, 1441 Broadway, New York, N.Y. — HAROLD E. THAYER, *Secretary*; other *Secretaries*: MALCOLM S. STEVENS, JAMES P. EDER, G. KINGMAN CROSBY.

## '37

Art Zimmerman reports: "On the evening of November 2, I was grabbing a sandwich at Midway Airport, Chicago, and along came Glen Guernsey '41, who lives near Springfield, Mass. Later that evening in Wichita, I met Jim Thomson at the airport and we wound up having a long visit in his hotel room. You will probably remember that Jim was president of our Class, Freshman and Sophomore years. He now has a manufacturers' agency business in Dallas called the Thomson Engineering Service. I returned to Cleveland, November 4, and ran into Joe Keithley at the Cleveland airport. I talked with Joe's wife a couple of days ago and learned that this week Joe is in Boston for the American Institute of Electrical Engineers convention and was scheduled to give a lecture at M.I.T.

"Today should be a memorable one for Cleveland Alumni. After several months of planning, we have finally arranged to have Dr. and Mrs. Stratton with us for a dinner meeting tonight. Ladies have been invited as well as the parents of present students. This noon there is a luncheon planned, where Dr. Stratton will meet with a few Cleveland business leaders. As I am president of the local Alumni group this year, you can well imagine that I have been more than a little busy on this project recently. Bob Harris and Dick Young will be other representatives of '37 at this dinner. Another member of our Class, whom I saw a while ago, was John Pellam. He is now doing low temperature research work at Cal Tech. We met in the office of the vice-president of engineering, Walt Ramsaur '28, at AiResearch Manufacturing Company in Los Angeles. Walt, John, and I were together for about an hour before the conversation got around to M.I.T. and we discovered that John and I were classmates and then recognized one another. Of course, I know I haven't changed, but it's sure strange the way all you guys have aged in 22 years."

Win Comley also sent in a very welcome report in which he says: "After returning from Europe in 1955, I was in the Lummus Company New York office, for about a year and then transferred to the Lum-

mus Company heat exchanger plant at Honesdale, Pa. In July of 1957, Lummus sold the Honesdale plant to Yuba Consolidated Industries of California. Under Yuba the plant continues to manufacture heat exchangers mainly for the power and process industries. While at Honesdale I served as assistant chief engineer. July of this year Yuba purchased Arrow Industrial Manufacturing Company in Tulsa, Okla. Arrow is now known as Aimco Products Corporation, a subsidiary of Yuba. After the acquisition I was transferred to Tulsa in the capacity of chief engineer. That explains the address change. At the Tulsa plant we are also in the heat exchanger business but specialize in air-cooled units along with refrigeration condensers and finned tubes."

Bill McCune has been nominated by the Alumni Association for the position of Alumni member on the M.I.T. Corporation Visiting Committee for the Department of Mechanical Engineering. Bill works for the Polaroid Corporation in Waltham, Mass., and lives in Lincoln, Mass. . . . Harry Goodwin and his wife Mell have just returned from a five-week combined business and pleasure trip to Europe. They took in England, Germany, Switzerland, and France and had a wonderful trip.

Let us know your thoughts on the 25th reunion. Almost all the returns so far are in favor of the Oyster Harbors Club. If you prefer an "on campus" reunion, now is the time to express your opinion. — ROBERT H. THORSON, *Secretary*, 506 Riverside Avenue, Medford, Mass.; S. CURTISS POWELL, *Assistant Secretary*, Room 5-323, M.I.T., Cambridge, Mass.; JEROME SALNY, *Assistant Secretary*, Egbert Hill, Morrisstown, N. J.

## '38

When it gets to typing these notes myself I am just as well pleased that my classmates don't send in any more material than they do. But please do not let my problems discourage any of you from writing. I'll use the material somehow. We have a note that Edgar Taft has been nominated by the Alumni Association for the position of Alumni Member on the M.I.T. Corporation Visiting Committee for the Medical Department. The departmental visiting committees, composed of nine members, have three who are recommended by the Alumni Association. . . . Another brief item indicates that Tom Bjorkman is now in St. Louis with the Monsanto Chemical Company.

Given Brewer reports a visit from Yoshio Mikimoto. Yoshio is the head of the East Asiatic Consultants, an engineering firm in Tokyo. His visit to the Brewer Engineering Laboratories, Inc., was part of an extensive tour of the U.S. He recently visited South America, where his firm is expanding in iron and manganese mine engineering.

Bill Whitmore has resigned as chief scientist, special projects office of the Navy, to become consulting scientist on the chief scientist's staff of Lockheed's missiles and space division. I should like to

close with a couple of extracts from Bill's letter: "The POLARIS job was a challenging opportunity and a wonderful experience. I doubt that I shall ever again work with such a congenial group of officers and civilians. Oddly enough, my wife's brother-in-law, Ned Bossange, was shifted to the East Coast by PanAm just as we moved West. He is stationed at Idlewild and has general charge of all engineering equipment (including aircraft) for PanAm's East Coast operations. We have four boys and two sports cars, plus a 1930 Franklin sedan of my wife's, the last still in Washington, pending a decision on whether to have it shipped out. We have bought a large Spanish colonial house, about 30 years old, complete with swimming pool — almost room inside to hold our combined library of about 4,000 books." — DAVID E. ACKER, *Secretary*, Arthur D. Little, Inc., 35 Acorn Park, Cambridge 40, Mass.

## '39

At the November symposium of the American Zinc Institute, held in Detroit, two Tech men were among the impressive list of speakers. One was David Morgen, President of Nelnor Manufacturing Company, who spoke on "Practical Aspects of Operating Dual Nickel System of Plating on Zinc Die Castings." And a near-classmate, S. F. Radtke '40, who is the director of research for the A.Z.I.'s Expanded Research Program, concluded the final session with a recapitulation of the symposium's progress.

Dick Leghorn, who was mentioned in last month's class notes, breaks in again this month with news of his appointment, as a top adviser on technical affairs to disarmament chief Charles A. Coolidge, by Secretary of State Christian A. Herter. Dick, President of Itek, will serve on a consultive part-time basis on a joint State-Defense Department disarmament study. His chief job will concern analysis and advice on technical matters in arms control proposals, a position in which he served before under former disarmament adviser Harold E. Stassen.

*The Boston Sunday Herald* of October 18, 1959, carried a story about a 1939-1941 combination. Harold Hindman and George S. Burr, in that order, teamed up in 1946 to form Instron Engineering Corporation. Instron manufactures a line of materials testing machines, ranging from ones measuring as little as 1-5000th of a pound, to big ones that can measure forces of 10,000 pounds. From an early start just after World War II in a one-room office and plant in Boston, the firm has now grown into a sparkling new plant out in Canton, Mass. Its annual gross is currently running around \$2½ million. And in case you are wondering about the derivation of the firm name, here's the clue: take the first syllable of "instruments" and the third of "electronics."

Speaking of consultants, I am another '39er who has just accepted a part-time consultant's job with the government. With me, it is in the Office of Area Development of the Department of Commerce. They have asked me to help furnish ma-

terial and then help in the writing of a new book designed to tell the story of what industry really is. The audience in part will be civic and community leaders seeking to bring new industry to their communities. This job will be right in line with my current assignment for *Factory Magazine*, administering our annual "10 top plants competition," in which are featured the 10 top manufacturing plants of the year.

Still speaking in the first person, I've just finished an annual country-wide tour of some 25 spanking-new industrial plants, covering over 15,000 miles over a two-month period. Each plant visit takes a full day, exclusive of travel, and it is a fascinating assignment to see how outstanding are these new plants that are contributing so much to our growing American economy.

While on one leg of this annual jaunt, in mid-November, I stopped in to see Bill and Jeanine VerPlanck. They live in Mill Valley, Calif., just across the Golden Gate Bridge from San Francisco. Bill is an associate mining geologist with the California State Division of Mines. His department does work comparable to the U.S. Geological Survey, but on a state level. An example of Bill's work would be an inventory study of mining activity within an area, in which all the mining resources are studied and tabulated. Bill, originally from Salem, Mass., and from a line of famous old sailing ship captains, likes the West Coast so much that it would take a heap of persuading to get him to move back! Perhaps "ships" are part of the reason; Bill is captain of their own 19-foot sailing sloop, with attractive Jeanine as crew, and the year-round sailing at San Francisco certainly isn't hard to take.

Plug, with no payola except that of satisfaction for helping put the message across: For those of you who haven't yet contributed to this year's Alumni Fund, please heed your reminder letters from either Seymour Sheinkopf or me as your two hardworking class agents. And in so doing, you'll automatically be kept on the subscription list for this fine new-look *Technology Review!* — OSWALD STEWART, *Assistant Secretary*, 31 Birch Road, Darien, Conn.

## '40

The big news this month is that the reunion arrangements have been definitely settled. The reunion will be held at the Chatham Bars Inn in Chatham on Cape Cod on June 10, 11, and 12. As reunion chairman, Bob Bittenbender says: "I'm sure that we can have a real wing-ding for our 20th reunion." Members of the reunion committee, in addition to Bob, include Henry Wight, James Baird, John Danforth and Russell Haden. By the time you read this, June and the reunion will not be far away, so plan now to come.

In reminiscence of the days of the draft comes a letter from Charlie DeMailly: "I feel badly out of step with all Faithful Forties and wish to step forward and be saved. Although I have scanned the class notes from time to time, I fear that my

responses to the call for personal information have been few. I am sure that my anonymity has upset no one, but the thoughts of a 20th reunion arouse some mighty strong instincts of loyalty to the old group. The June get-togethers, especially at the 10- and 15-year marks, have always found me far and away over the waves indulging in the deep water summer cruising that has been our family holiday trademark. I fear that beyond the 20-year point, the increase in paunch and in hairless scalp would be too much to spring on old friends all at once. Therefore, count me in and let me know how I can help.

"The DeMaillys live in South Dartmouth, Mass., in an old home overlooking Buzzards Bay, with two acres of grass for Charles, Jr., to cut and enough salt in the air to remind me constantly of my worthy ambition to become a beachcomber. In the meantime I commute almost daily to my Boston office 70 miles away. My present job is with Plymouth Cordage. I came into this particular picture when Plymouth Cordage took over my old interest, the J. C. Rhodes Division of United Shoe Machinery Corporation, here in the New Bedford area, plus the W. W. Cross Company of Jaffrey, N.H., and along with some other activities established itself as the largest manufacturer of eyelets, tacks, and nails in the U.S., plus being a national distributor for many other products in both the shoe manufacturing and general industrial fields. I became a vice-president, of course, by pointing out that the rest of the Class of '40 was already loaded with titles and distinctions—and I needed the job.

"My faithful inspiration and steady date, Elsie Eleanore, is holding up with considerable charm and vigor as the three children and I get older. One daughter, Claire, is already a sophomore at Radcliffe. Daughter Mimi and her twin brother Charles, Jr. (Buzz), are finishing high school this year, and I am considering mortgaging my gold inlays when all three are in college at one time, starting in 1960."

Ed Hooper, who did graduate work with us, has been appointed Rear Admiral in the Navy. Ed served on the USS Washington and USS Alaska during World War II. In 1946 he served in the readiness division of the Chief of Naval Operations and later served in the military application division of the U.S. Atomic Energy Commission until 1949. Next he was the assistant for nuclear applications in the Bureau of Ordnance, and from 1955 to 1958 he was assistant chief of the Bureau of Ordnance for Research, and director of research and development. He was responsible for the research, development, and testing of all Bureau of Ordnance Weapons Systems, except the Polaris Missile. Ed, his wife Elizabeth, and four children, live at Fort Adams, in Newport, R.I. — ALVIN GUTTAG, *Secretary*, Cushman, Darby & Cushman, American Security Building, Washington 5, D.C.; SAMUEL A. GOLDBLITH, *Assistant Secretary*, Department of Food Technology, M.I.T., Cambridge, Mass.; MARSHALL D. MCCUEN, *Assistant Secretary*, 4414 Broadway, Indianapolis 5, Ind.

## '41

In the budget of the University of California for next year is a million dollar item for Ted Sherburne's plan to establish and operate an experimental closed-circuit television network linking the campuses in Berkeley, San Francisco, and Los Angeles. The network will be administered by the university extension office, and will be used to determine how TV can be adapted to university needs.

Leona Norman Zarsky spoke on "New Hope for Ailing Hearts" at the annual meeting of the North Shore branch of the Beth Israel Hospital Women's Auxiliary, held in Lynn, Mass. Leona has been a research fellow at Beth Israel and at Harvard Medical School since 1950. She served internships at Boston City Hospital and Massachusetts Memorial Hospital, and has held research fellowships at Columbia Medical School, Tufts Medical School, and the Sias Laboratories of the Brooks Hospital. Much of her work has been on heart disease.

The Alumni Association directory for this year lists the following members of the Class and the duties they are performing for the Association. It's an impressive list, and all these fellows are to be commended for the time and energy that they're devoting to these jobs. Hank Avery, as a member of the national nominating committee, is a member at large of the Alumni Council; Howie Morrison is an associate of the Council; Ed Beaupre and Ed Marden are the representatives on the council of the Houston and the St. Louis M.I.T. Clubs, respectively; and Reid Weedon is our class representative on the Council, as well as a member of the Alumni Fund Board. Two more members of the departmental visiting committees not mentioned last month are John Sluder, Food Technology; and Al Bowker, Mathematics.

Club officers include Joe Bowman, President of the Rocky Mountain M.I.T. Club (Denver); Bill Hargens and Herb Moody, Vice-president and Secretary, respectively, of Philadelphia; Bill Summershays, Treasurer, Rochester; and Harold Radcliffe, Secretary, Central Florida (Tampa). Members of the Educational Council, who have the important responsibility of maintaining friendly relations with secondary schools and interviewing prospective students, are Herm Affel, Philadelphia; Hank Avery, Pittsburgh (also regional chairman and honorary secretary, as well as assistant class secretary); Ed Beaupre, Nashua, N.H.; Bob Blake, Falls Church, Va.; Joe Bowman, Denver; Jim Cullison, Palos Verdes, Calif.; Porter Evans, Tenafly, N.J.; Joe Gavin, Huntington, L.I., N.Y.; Carl Goodwin, Bay Village, Ohio; Cranston Gray, Greenville, S.C.; Bill Hargens, Philadelphia; Luke Hayden, Pittsfield, Mass.; Knut Johnsen, Pittsburgh; Bob Meier, Hazel Park, Mich.; Warren Meyers, Winnetka, Ill.; Dave Moffat, Salt Lake City; Cliff Moffet, San Francisco; Herb Moody, Huntington Valley, Pa.; Carl Mueller, Ridgewood, N.J. (also regional chairman and honorary secretary, as well as class vice-president); Bill Orr, Pisgah Forrest, N.C.

(also regional chairman); Norton Polivnick, Denver; John Purinton, Middlebury, Conn.; Laurence Russe, St. Louis; Howie Samuels, Canandaigua, N.Y.; Don Scarff, Oakland, Calif.; Frank Storm, Amarillo, Texas (also class vice-president); Bill Summerhays, Rochester; Dave Thurlow, Birmingham, Ala.; and Ralph Wilts, New York.

If you're visiting New York City, don't forget the class luncheons, held by the M.I.T. Club of New York, the fourth Monday of each month. The club has its own quarters at the Hotel Biltmore. If you know somewhat in advance of your visit, call or write Carl Mueller at the Bankers Trust Company, 16 Wall Street, for additional hospitality.—IVOR W. COLLINS, *Secretary*, 9 Sunnyside Drive, Dalton, Mass.; HENRY AVERY, *Assistant Secretary*, Pittsburgh Coke and Chemical Company, Grant Building, Pittsburgh 19, Pa.

## '42

Charles H. Davenport of Monsanto Chemical Company has been appointed their European technical representative at the research and engineering division in Geneva, Switzerland. He was formerly assistant director of research at the company's Lion Oil Company Division in El Dorado, Ark. Dr. Davenport took his Sc.D. in Chemical Engineering with us.

Congratulations are in order for Captain and Mrs. Ernest P. Abrahamson (USN) of York Beach, Maine. Their son, Ernest, Jr., a graduate of the Class of '54, was recently married (in the M.I.T. Chapel) to the former Jane Eaton Storey. Captain Abrahamson took his S.M. in Naval Architecture with us.

In the course of writing these notes it has become apparent that a sizeable number of our classmates are participating in the operation of our public education system. Some are school board members, some are teachers and a great many are officers or committeemen of their Parent-Teacher Associations. In these days of increasing emphasis on academic achievement, better science and mathematics teaching, earlier grade language instruction, and more thorough training in English composition, it has occurred to us that the exchange of information might be of service to all concerned. If the readers of this column are interested, we shall publish a list in the May Review of all those who send along a postcard showing the location and nature of their participation in their local school systems.

A recapitulation of items listed in an earlier Review in the "Individuals Noteworthy" column: Harvey Kram has been promoted to Vice-president — operations of Revlon. Harvey is responsible for all manufacturing, purchasing and personnel activities. . . . Albert F. Clear has become an associate of the management consulting firm of Booz, Allen and Hamilton. . . . Thomas F. Connolly has been promoted to Rear Admiral and is now at the Bureau of Weapons, Navy Department, Washington. . . . Allen A. Crockett has been promoted to colonel and is also stationed in Washington. . . . Long distance move of the month (quite probably by

air) was by Remigo S. Roda, Jr., who left Paris, France, and is now at the TWA office at Idlewild. Other changes of state were by Akbar F. Brinsmade to Madison, Wis.; and Robert C. Williamson to Glendale, Ohio.

This time of year there is always snow in Stowe (Vermont). We hope that the rest of the class skiers do as well.—BOB KEATING, St. Louis; ED EDMUND, Albuquerque, J. J. QUINN, Hawthorne, Calif., and LOU ROSENBLUM, at Tech/ops, Burlington, Mass.

## '46

John A. Serrie was recently named Triton project manager at the Electric Boat Division of General Dynamics Corporation in Groton, Conn. John joined Electric Boat in 1953 as a design engineer. He lives on Cross Road, Waterford, Conn.

On a recent trip to the West Coast, I was surprised by a familiar face peering intently at me from across the Boeing 707 aisle. It turned out to be Stu Grandfield. Stu was headed for Pasadena to attend an I.R.I.S. (Infrared Information Symposium) conference in his capacity of sales manager for the photoconductor division of Infrared Industries, Inc., of Waltham, Mass. We had a pleasant reunion during the flight and I learned, among other things, that Stu joined Infrared as contracts manager but has recently been promoted to sales manager. Infrared is a rapidly expanding business and Stu has Infrared Industries at the top of the heap. Stu has three children, two girls and a boy, and they live on Peach Orchard Road, Burlington, Mass.

The November mail bag contained an eight-page color brochure describing the activities of Eastern Steel Plate Fabricators, Inc., accompanied by a very newsy letter signed by the Vice-president, Raymond D. Brown, Jr.: "Betty and I have had a busy summer. With the prospect of child No. 5 arriving in September, we moved in mid-August to a house large enough to accommodate the family. Accurate head count: Carol, 10; Leslie, 7½; Alison, 5; David, 1½; Blakely (new). (Ray didn't send his new home address, but his business address is Eastern Steel Plate Fabricators, 40th Road, Flushing 52, N.Y.) Since our Class has such a loyal group of successful industrialists, I'd better get in a business plug. The old salt mine has finally taken on a slightly diversified air, which is something we've been aiming towards for a long time. We line up as follows: Eastern Steel Plate Fabricators, as our new and more descriptive name suggests, builds things of steel, stainless, alloys, clad aluminum, and so forth, from ½ inch to 1½ inches thick. Our homogeneous lead bonding division does work for the process as well as nuclear industries and is headed by a man with over 30-years experience in this field. Another division is the franchised distributor for Stran-Steel in the metropolitan New York area. The Stran architectural line, a division of National Steel, is used generally on one, two, and three story schools, motels, and other buildings. Our job is to sell the architect on this method of construc-

tion (which when properly used is much less expensive). Another interesting end of the business is a small subsidiary named Radiation Products which is headed by an engineer who started his nuclear career back in the old Manhattan Project. He has organized an engineering staff to do specialized nuclear design. This unit ties in very nicely with our fabricating shop and lead bonding division. In addition to my other job, I am president of Radiation Products. (Titles come cheap.) All inquiries for our services gratefully accepted — think of all those hungry mouths." Thanks for your nice letter, Ray. Hope your mushrooming empire continues to prosper.

For the past few months, Ned Tebbets has been organizing our Class for the M.I.T. Alumni Fund. He is lining up metropolitan area chairmen, and is happy to announce that the following classmates have agreed to serve: John W. Taylor, Baltimore; Cliff Sibley, Boston; Fred Ross, Buffalo; Lorenzo B. Lea, Chicago; Max Daggett, Dallas-Fort Worth; Russ Dostal, Detroit; Glen Dorflinger, Houston; Bill Schield, Milwaukee; Rick Adler, New Orleans; Ted Henning, New York City; Bob Spoerl, New Jersey; Frank Westcott, Providence; Ed Belcher, Rochester; John E. Taylor, St. Louis; Win Hayward, San Francisco; and Dave Denzer, Schenectady.

One of the more constant readers of this column is Dr. John Pollard of 208 Tareyton Road, Ithaca, N.Y. John manages a letter a year, and always spices it with humor. His latest was written after receiving a recent issue of The Review in which this column reported the poor showing of our Class in the Alumni Fund department. Being statistically inclined, John has been keeping records of information appearing here. He reports that our Class is prolific. Led by Antonio C. M. Nunes with eight children, the Class has produced several thousand potential Frosh. Far more than our meager contributions to the Alumni Fund will ever support. He also has noted a peculiar statistic which, considering the exceptional caliber of people in our Class, doesn't surprise me a bit. John points out that almost every member of our Class has been promoted one or more times, and no one has ever been fired. One statistic which he believes should be on record but which is totally lacking is the number of pounds we individually have gained since school. John admits to 50, and I'll add my own statistics of having shot up from around 140 to 205 and then down to a very comfortable 185. Can anyone top that?

Thanks to John and Ray for their letters. Hope others will follow suit soon. See you next month.—JOHN A. MAYNARD, *Secretary*, 15 Cabot Street, Winchester, Mass.

## '48

These remarks will not be printed and in your hands until mid-winter, but I want you all to know that while writing them, in the fading light of a cloudy December afternoon, my wishes went out to you all for a Merry Christmas and a New

Year full of achievement and enough problems to engender true success.

Tom Lacy is area chairman of the United Fund drive in Dover, Mass., this year. Tom, who is the New England sales manager for Western Felt Works, has been active in United Fund work since moving to Dover in 1957. . . . Nicholas Prasinos has been recommended to practice law in the Commonwealth of Massachusetts by the Massachusetts Board of Bar Examiners. Mr. Prasinos earned a B.S. in Mechanical Engineering at Tech and earned his LL.B. in the evening division of Suffolk University Law School, from which he graduated cum laude.

William Leong is being mentioned as the successor to Haverhill's planning director, Spaulding E. Owen. Mr. Leong, who has a master's degree in City Planning, has worked on Haverhill's master plan. . . . Donald J. Atwood of Marblehead will be assistant director of the new AC Spark Plug Research and Development Laboratory now under construction on Route 128 near Wakefield, Mass. AC Spark Plug is the electronic division of General Motors. This new laboratory represents the most recent extension of General Motors' advanced research and development group. Work at the Wakefield Laboratory will be concerned with inertial platforms, gyros, and accelerometers for missile guidance systems.

Living, as I do for much of the year, on the outpost of that super-city which stretches along the Eastern seaboard from Bangor on down, I count pretty heavily upon the clipping service for the material presented here. However, the United States postal service is kind enough to extend its services to the frontier by means of dog-teams and/or some of the more recently developed means of communication. Therefore, if you have some hot tip on the shenanigans of one or more of the members of '48, don't hesitate to drop me a line. It may be delayed, but we've never had to wait more than 36 hours for the plow to get through.—ROBERT R. MOTT, *Assistant Secretary*, Box 113, Hebron, Maine; RICHARD H. HARRIS, *Secretary*, 26 South Street, Grafton, Mass.; *Assistant Secretaries*: HARRY G. JONES, 94 Oregon Avenue, Bronxville 8, N.Y.; HERBERT KIN-DLER, 128 Elatan Drive, Pittsburgh 16, Pa.

'49

Not much news from the clipping service this month: a note from the Wellesley, Mass., *Townsman* that Mr. and Mrs. Charles M. Sutherland and two small daughters have moved to 79 Mayo Road from Briarcliff Manor, N.Y. He is an electronics engineer with C and K Company of Cambridge. . . . Gordon Raisbeck, who received a Ph.D. in 1949 from M.I.T., is spending a year in Washington, D.C., studying satellite communications problems with the advanced research projects division of the Institute for Defense Analyses. He will be on leave of absence from the Bell Telephone Laboratories where he is in charge of transmission lines research, the guided wave research department. . . . Edward R. Hermann,

S.M. in 1949, was awarded the Harrison Prescott Eddy Medal with E. F. Gloyne by the Federation of Sewage and Industrial Wastes Association. This medal is conferred each year for the outstanding research contribution to the existing knowledge of fundamental principles of waste-water treatment. Drs. Hermann and Gloyne received the award following four years of research leading to the design criteria and equations for the construction and operation of a biological wastewater reactor. The reactor depends upon a mixture of algae and bacteria to break down and eliminate various water contaminants.

We start below serializing the returns from the 10th year reunion questionnaire. Somewhere along the line somebody numbered the questionnaires (apparently as received) and we are just lazy enough to follow this scheme. Consequently, we will return periodically to the B's and C's in later issues, as a result of this "first come, first published" organization. The information on these questionnaires, reported as of last May, is presumably out of date in some respects by now. You should remember that the present tense refers to May 1959. If the information is incorrect now, please write and tell me about it. Perhaps I can garner a little information for later columns.

John W. Barriger, XV (Option 1), resides at 208 Witmer Street, Los Angeles 26, Calif. In June 1950 he obtained a certificate in transportation from Yale. He is a trainmaster for the Santa Fe Railroad, in charge of operations at the Los Angeles Yard. Married (Evelyn) and has no children. Pets: one dog. Lives in a rented home, urbia. Has held six jobs since graduation, all with the same company. His hobbies—skiing and camping.

Carl A. Bergmann, XV, resides at 6 Rice Spring Lane, Wayland, Mass. He is planning and procurement manager of American Optical Company, cool ray division, handling direct planning, purchasing, production control, packaging, and shipping for the division. Married (Elizabeth) and has four children—two girls, aged nine and three, two boys, aged five, and one month. Pets: one dog. Owns his home in suburbia. Has held four jobs since graduation.

James K. Berman, IX, resides at 157 County Ridge Drive, Port Chester, N.Y. He is secretary for the Raisler Corporation, describing his work as that of mechanical contractor doing heating and air conditioning for large commercial and industrial installations—a little of everything, primarily project manager. Married (Peggy) and has two children—boy of four and girl of two years. Owns his home in suburbia. Has held one job since graduation.

Donald L. Botway, XV (Option A), resides at Edgemarsh Hill Road, Westport, Conn. He is supervisor, planning and technical administration for Lycoming division, Avco Corporation, Stratford, Conn. His work includes responsibility for planning, technical negotiations with the military, proposal preparation, and engineering specifications. Married (Jacquelyn) and has two girls—ages four and three. Pets: one dog. Owns his home in suburbia, as well as a farm in New York

State which he maintains. Has held eight jobs since graduation.

Robert D. Brown resides at 23 Terrace Avenue, Riverside, Conn. He received a B.S. degree in Course I from M.I.T., as well as a B.A. degree in liberal arts from Middlebury College the same year. In 1951 he received the degree of M.C.P. from M.I.T. in City Planning. He is an associate planning consultant for Frederick P. Clark and Associates, acting as consultant to communities in New York and Connecticut, giving assistance to planning commissions in preparation of master plans, zoning ordinances, and so forth, and making studies of problems of community development. Married (Carol) and has two boys, aged three years and six months. Owns his home in suburbia. Has held one job since graduation.

Bruce Campbell, I, resides at 32 Phillips Street, Marblehead, Mass. In 1953 he received a M.S. at M.I.T. He is executive vice-president of the Massachusetts Safety Council, Boston, and partner in Bruce Campbell and Associates, Consulting Engineers. For the Safety Council he directs all operations, is concerned with all types of safety, but primarily industrial safety for 250 of Massachusetts' largest manufacturers and traffic safety including legislation, traffic engineering, educating and enforcing for greater safety. As a consulting engineer he handles traffic engineering for state highway departments and private clients; city planning; location feasibility studies; traffic engineering research. Married (Marilyn) and has a boy, aged one and a half. He rents a home in suburbia. Has held three jobs since graduation.

John Miller Cook, II, resides at 103 Dartmouth Avenue, Johnstown, Pa. He is district traffic manager, Pittsburgh district, Bethlehem Steel Company, in charge of traffic and transportation activities covering Johnstown Steel Plant, Rankin and Leetsdale Fab Shops, Pittsburgh barge shipments, and Bethlehem Mines Corporation (coal mines). Married (Elle) and has two girls, aged three and one and a half. Pets: two goldfish. He rents a home in suburbia. Has held one job since graduation.

Russell N. Cox resides at 103 Loring Road, Weston, Mass. He received a B.S. degree in Course VI from M.I.T., and an M.B.A. degree from the Harvard Business School in 1951. He is vice-president, special project division, of Cabot, Cabot and Forbes, handling everything from kiddie parks to hotels. Married (Sally), has two girls, aged four and one. Owns home in suburbia. Has held two jobs since graduation.

Charles Currie, Jr., XIII, resides at 220 Belmeade Road, Rochester 19, N.Y. He is sales engineer for Siewert Equipment Company, Inc., handling application and sales of pumps and air compressors. Married (Norma) and has two children, girl of six and a boy of two years. Pets: one dog. Owns home in suburbia. Has held five jobs since graduation.

Charles Winthrop Davis, X, resides at Hacienda La Patera, Calzada Vallejo 1111, Mexico City, Mexico. He is a partner in Insurance and Reinsurance Brokerage, Kennedy and Kennedy and Hijo, A.P.

and is representative for Marine Board of Underwriters of New York. Married (Patricia) and has two children, boy aged four and a half, girl aged one and a half. Pets: one dog and one cat. Owns home. Has held three jobs since graduation.

Frank A. Dinneen, Jr., X, resides in Changewater, N. J. (P.O. Box 44). He is senior production supervisor for J. T. Baker Chemical Company, in the experimental pilot plant, supervising regular production of specialty and pharmaceutical organic chemicals. Married (Love Dean) three children, two boys, eight and six and a half, and a girl of two years. Pets: one turtle. Owns home in the country. Has held two jobs since graduation.

Ira Dyer resides at 26 Valleyspring Road, Newton 58, Mass. He received a B.S. degree in 1949 in Course VIII, an M.S. in 1951, and Ph.D. in 1954 from M.I.T. — both advanced degrees in Physics. He is head of Applied Acoustics Research for Bolt, Beranek and Newman, Inc., and is principal investigator on several research programs, both theoretical and experimental, in areas of "noise and vibration in space vehicles," "flexural wave propagation in structures," and so forth. Married (Betty), has a boy of eight and a girl of six. Pets: one dog, one hamster, one mouse. Owns home in suburbia. Has held one job since graduation.

Fletcher Eaton, XV, resides at 83 Herrick Road, Newton Center 59, Mass. He is group leader, small mechanisms and packaging, Raytheon Company, Wayland, Mass., supervising a group of engineers who design gear trains, computers, and amplifiers used in servomechanisms associated with defense radar systems. Married (Nell), has one boy age one year. Pets: two weevils — one Lemuel, the other unnamed. Rents an apartment in suburbia. Has held three jobs since graduation.

Paul Thomas Reynolds, XVII, resides at 143 Newbury Street, Boston 16, Mass. He is a partner at Tracy and Reynolds — structural engineering design and supervision of construction service to architects and clients on building construction projects; and consultants on special structures and investigations. Unmarried — and hunting. Has an apartment in urbia. Has held four jobs since graduation.

Gaetano Falabella, Jr. ("Gates"), resides at 23 Burlington Road, Bedford, Mass. He received a B.S. and M.S. in Aeronautical Engineering, 1949 and 1951, respectively. He is research engineer, aerial delivery systems office, Quartermaster Research and Development Command, Natick, Mass. Married (Bea), has four children, girl eight, and boys aged six, four, and two. Pets: dog, cat, rabbit, and salamander. Owns home in the country. Has held four jobs since graduation.

J. R. Foote lives at 1809 Miracerros Lane, Alamogordo, New Mexico. He received a B.S. in 1940 in mathematics at Texas Technological College, and a Ph.D. from M.I.T. in 1949 in Course XVIII. He is professor of mathematics and director at Holloman Graduate Center, University of New Mexico, teaching applied mathematics or mechanics or fluid mechanics. Married (Betty), has three children, girl eight and a half years, and two boys aged seven and three and a half. Owns home in urbia. Has held five jobs since gradu-

ation. — FRANK T. HULSWIT, Secretary, Arthur D. Little Company, 35 Acorn Park, Cambridge 40, Mass.

# '50

Come next June 10, 11, and 12, the greatest transformation in history will take place as the Class of '50 salutes the 50th state, Hawaii, in the celebration of its 10th reunion. The theme of the reunion has been set and all that remains is the transporting of one of the Hawaiian isles to Lenox, Mass. In all seriousness though, it plans to be the biggest and best reunion ever. Arrange your business trips now so that you are in the vicinity of the Hotel Curtis in Lenox, Mass., on the second weekend of June, 1960. More definite information will be forthcoming directly from reunion headquarters in Cambridge, but for now it will suffice to get your grass skirts and leis out of mothballs.

Tom Howitt has been promoted to manager of special process research in the research and development division of Corning Glass Works. He has been with Corning for nine years; his most recent position being that of supervisor of process development. An addition to the family in June gives Tom Jimmy (five months), Tommy (four years), and Pam (eight years). Tom has been active in Alumni Fund work as chairman of the regional solicitation program for Corning. He has been able to show 100 per cent participation for the M.I.T. Alumni Fund for the years 1958 and 1959. . . . Alan Bates was appointed manager, economic evaluation section, development appraisal department, Atlas Powder Company. . . . Paul Pearce is now manager of project engineering, electronics and avionics division, Lockheed Aircraft Corporation.

Lawrence Gould was elected a vice-president of Microwave Associates, Inc., this past summer. He has been promoted to fill the newly created post of manager of tube operations. He will be responsible for all duplexer and power tube engineering and production. Lawrence has been with Microwave Associates since 1954, after he received his Ph.D. at M.I.T. . . . Henry Lacey has been promoted to staff engineer in the 7030 engineering department of the IBM Product Development Laboratory at Poughkeepsie, N.Y.

To handle sales engineering and technical service for its recently introduced blow-molding machine, F. J. Stokes Corporation, Philadelphia, has appointed Robert Boyden as a sales engineer specialist. Blow-molding is the technique commonly used for the production of squeeze bottles and other hollow plastic articles. Bob joins Stokes after previous affiliations with Morning Star Corporation, a prominent plastics molder in Cambridge, Mass., and E. B. Kingman Company, a leading custom molder and extender in Leominster, Mass.

Ed Hayes is with Kelsey-Hayes Company, heading up a recently acquired subsidiary concerned with missile components. Ed was formerly with the Applied Physics Laboratory of Johns Hopkins University. . . . Elliot Ring is chief of pro-

pulsion on a big missile project with the Martin Company in Denver. . . . Joe Saylor is a member of Avco Company in Wilmington, Mass., where he is concerned with processing and production.

Jim and Sheila Kennedy announced the birth of their sixth child, Maureen, born Thanksgiving Eve (November 25). The Kennedy's now have four girls and two boys as Maureen joins Kathleen, Brian, Kevin, Gail, and Patricia. Jim is the head of his own public relations firm, James H. Kennedy and Company, Westport, Conn. . . . Charles Register has been appointed manager of Great Valley Laboratory of Burroughs Corporation. . . . The Fafnir Bearing Company in New Britain, Conn., announced the appointment of Philip Pearson, Jr., as chief plant metallurgist.

John J. Earshen is assistant to the head of systems analysis of Bendix Products in Ann Arbor, Mich., where he is involved with antisubmarine warfare problems. His family now consists of a four-year-old son, a one and a half-year-old daughter and a baby girl. J. J. reports that Sigfrid Holmgren is with another branch of Bendix Corporation, Bendix Pacific in North Hollywood.

The following newsy letter from Jack Willard gives information about several Course X grads: "Charlie Palmer and family (consisting of wife, girl, and three boys) spent a week on the Cape this summer. Charlie is with DuPont making orlon down in Waynesboro, Va. We had a grand time soaking up some New England sunshine and dipping toes in the warm waters of the Cape. . . . Amiel Brinkley, X-B, had a stopover at Logan Airport this summer on his way to a paper mill in Maine. Brink is with International Paper in Mobile, Ala. He has two little girls now to keep him busy, not to mention his charming wife Kit. I guess they couldn't keep him away from Maine after his days there at the Course X-B Bangor Practice School Station. . . . Bill Gordon, IV-A, was in Boston this fall at the Alumni Officers' Conference. Bill has taken the plunge into the world of private enterprise with his firm of Gordon and Drake, Architects of Jacksonville, Fla. We were delighted to see Bill and enjoyed a splendid New England lobster dinner with him. In addition to his profession, Bill said that he has had much pleasure interviewing prospective students for the Institute. Like Bill Gordon, I am in the process of plunging into private enterprise with the small company of Fiske and Willard in Hathorne, Mass. We are making instruments for medical research and dabbling with marine tachometers. There is never a dull moment in a small business venture. My two and one-half years in this work have been most challenging even though we are still in the usual long years of growing pains. One of the greatest pleasures that I have had is the generous advice and encouragement given by many of the local older and wiser M.I.T. grads in the Boston area."

The following listing of classmates, who attended the Alumni Day festivities last June, shows that more and more wives are accompanying their husbands back to Cambridge in June. Attending the banquet and Pops Concert were: Mark and

Mrs. Alfandary-Alexander, Jay and Mrs. Bedrick, Robert Cesari, Joe and Mrs. D'Annunzio, Paul Jensen, John and Mrs. Kern, Bob and Mrs. Mann, Ralph Robins, Robert Roig, Jacob and Mrs. Shapiro, Morris and Mrs. Waters, Jack and Mrs. Weaver, Robert and Mrs. Wohler, and Syed Alvi. With our 10th reunion approaching, at least 10 times the above number of classmates will be in attendance at the Hotel Curtis. Plan now to come and join in the festivities.—JOHN T. WEAVER, *Secretary*, 24 Notre Dame Road, Bedford, Mass.

## '52

As I write this column now it is December; when you read it, it will be February—just to answer some questions on news lag. Questionnaires are still pouring in, along with a few letters. Many thanks, and if you haven't let us know what you're doing now, take that minute and drop a line.

Howie Anderson is a heavy machine tool salesman with Luther Pedersen, Inc., in Chicago. He's now living in Park Forest, Ill., with wife Ruth and two sons—Jim, six, and Steven, three. . . . Ralph Bell is now at Thompson Ramo Wooldridge, Inc., in Cleveland as a manufacturing engineer in the Jet Engine Division. Mentions Bob Ehrt is also there. . . . Dick Lyle in El Cerrito, Calif., is with California Research Corporation as a research chemist in the petroleum products exploratory research division and is still active in the Army research and development reserve program. Had his first child, Earl Kenneth, last March. Mentions that Nick Haritatos and Jack Godfrey are also at C.R.C. . . . John Gaylord is in Lancaster, Pa., with RCA as an engineering leader, power tube design and development section, and has received his M.S. nights in physics. Bucky (Bill) Hawe writes from Burlingame, Calif., that he's plant manager at Metropolitan Furniture Manufacturing Company in South San Francisco.

A good many of our Class have written in from the far corners 'of the globe: Gunnar Folke writes from Sandviken, Sweden, that he is assistant manager of wire drawing and cold rolling with Sandvik Steel Company. . . . Swraj Paul writes from Calcutta, India, that he is a partner and chief engineer with M/S. Amin Chand Pavare Lal, looking after import/export trade and also the steel melting furnace and steel re-rolling mills. Sounds like a real handful. Swraj Paul is married and has twin sons, two years old, and a daughter born November 12, 1959. . . . Alexander Maidanatz is assistant European continental sales manager for Electronic Associates of Brussels, selling analog computers and related equipment in the Benelux countries, France, Spain, and Portugal. In 1958 he married Miss Claude Le Gouellec de Schwarz, and they are now living in Paris. . . . John Small, Jr., is in Guayaquil, Ecuador, with California Ecuador Petroleum Company, as a geologist, while working on and writing his Ph.D. thesis for the University of Colorado. He married Marta Navarro.

Anthony Ralstan, wife, and Jonathan Mark Ralston are in Leeds, England, where he is a lecturer and doing research in the Computer Laboratory, University of Leeds. . . . Closer to home, Gerhard Hover wrote a letter from Montreal where he is on special assignment for Lummus Company of New York, in the administration of a large refinery construction for British Petroleum. Gerhard mentions he has searched in vain for news of Course I classmates. Since graduation he has been with Lummus Company in many places including Minnesota, Antwerp, Belgium, Bordeaux, France, Lake Charles, La., back to Bordeaux in a different plant, is now in Montreal, and expects to go to Germany in the spring for the construction of a synthetic rubber plant. He is married and has a five-year-old daughter.

John Gyulveszi is also in Canada—Tillsonburg, Ontario, to be exact, where he is president of Bilvesy Construction, Ltd. He is married, has two children, Heather, three years, and John Gregory, one year. . . . Jack Guthrie is in North Vancouver, B.C., with General-Pacific Bridge Company as a project engineer building a dam for domestic water supply. . . . And P. John Carrothers is in Nanaimo, B.C., with the Fisheries Research Board of Canada in charge of Fishing Gear Research, at Departure Bay, B.C. In the States, but quite far up, is Lieutenant Charles J. Mathews (CEC), USN, who is with the Navy at Adak, Alaska, as a shops engineer, co-ordinating the construction, maintenance, and transportation effort with about 300 people under him.

Clif Morse just left Campbell and Aldrich, architects in Boston, where he had been doing interesting work on the vacation house in the Caribbean for one of the Rockefellers, and is now with Architects Collaborative in Cambridge as an architect on the University of Baghdad, Iraq. Clif became a registered architect this year and he and his wife now have three sons. Clif also writes that Dave Wallace is soon to leave for Finland for at least a year on a Fulbright, to study architecture. . . . G. Robert Koch is in Oakland, Calif., working for Kaiser Engineers and Constructors (Henry J. Kaiser Company) as a project hydroelectric engineer on the Volta River project for Ghana, Africa.—DANA M. FERGUSON, *Secretary*, 252 Great Road, Acton, Mass.

## '53

It looks as though The Technology Review was right at least once in its history. In November 1958 it said in part: "Dick is in bad shape; his weekend date (at our 5th reunion), Carolyn Powers, is rapidly nudging him toward the church door." As it turns out, Dick and Carolyn were married in early October. Following a honeymoon trip through upper New York and Canada, they took up residence in Melrose. . . . Bill and Ann Gilbert switched plans and are now in sunny California, where Bill is a soils engineer for a consulting firm. Part of a note from them reads: "We temporarily have an apartment near the University of California

where we make a half-hearted attempt to be in but you know how that can be in a strange place! The soils business flourishes here as do restaurants, jazz spots, theatres, scenery, and extremely warm weather. (No rain since we've arrived)." . . . Bumped into ole Phil Bianchi at a dance the other night. He swore up and down he had no news. Is still with United Shoe, likes it, and bachelorhood. Tom Faulhaber was also there; he *as usual* was with Nancy Reid, who, I might add, is a real jewel.

A number of our classmates are active in M.I.T. Alumni Association work, and it might be worthwhile to make a brief rundown. (If you think I'm doing this partially to add filler material for the column, you are right . . . it will make up for the letters you *haven't written*.) Of course, good ole faithful, Mandy Manderston is our class representative on the Alumni Council. Six classmates are officers in various M.I.T. clubs scattered around the world; Homer Fay is vice-president of the Club of Buffalo and Niagara Falls; in Detroit, Jim Mast is the secretary; Joe Marshall is also a secretary, but in warmer country—Los Angeles; a third secretary is John Koch at the M.I.T. Club of Milwaukee; Bill Sollecito is treasurer in Schenectady (boy, that's for me; to hell with this writing, let me handle the money); the sixth club officer is George Thompson, who is assistant secretary in Washington, D.C.

Four more fellow graduates are active as Educational Counselors for the Institute. Jim Gardner is serving in the Stockton, Calif., area; Don Miller in Cincinnati; Bob Wallace in Toledo; and Jim Bresce in Oak Ridge, Tenn. It might be appropriate to add that the Educational Council aids the Alumni Association by interviewing prospective students and otherwise maintaining liaison between M.I.T. and the secondary schools.—MARTIN WOHL, *Secretary*, Room 1-131, M.I.T., Cambridge, Mass.

## '56

One of the items which arrived in the mail this month was the new edition of the Alumni Association directory. It seems that the Class is already beginning to infiltrate the regional M.I.T. clubs. In Denver, Richard Glissman is the current vice-president of the Rocky Mountain M.I.T. Club. The M.I.T. Club of Colombia in Bogota boasts Roderigo Botero as treasurer and Eduardo del Hierro as representative on the Alumni Council. This, however, is just the beginning: wait 'til next year!

Richard Peskin (Princeton) and Richard Mateles (M.I.T.) have recently added Ph.D.'s to their laurels. Dr. Peskin is now with Project Matterhorn at Princeton, while Dr. Mateles is in Delft, Netherlands. . . . Ed Boggs writes that he has recently been released from the Air Force and is now working for Stone and Webster consulting engineers in Boston. He is married to the former Nancy Swasey of Simmons, and has one son, Jeffrey Edward, now 21 months old. . . . Bob Biehl is now an ensign in the U.S. Navy

—on active duty at the Harvard Medical School. This sounds like quite a racket. Bob will receive his M.D. in June of this year.

One of the pet student projects on campus in 1956 was the organization of the commuters into a group that would provide some of the advantages of campus life to the non-resident students. At that time, the Commuters' Association, activated largely by such people as Bob McKelvey and George Meyer '57, was just getting off the ground. This past September, it was quite satisfying to see the commuters, now organized as the Non-resident Students' Association, moving into a house on Memorial Drive near Baker. The new home is complete with lounges, recreation facilities, sleeping quarters, study rooms, and so forth. Progress! — BRUCE B. BREDEHOFT, *Secretary*, 1528 Dial Court, Springfield, Ill.; M. PHILIP BRYDEN, *Assistant Secretary*, 3684 McTavish Street, Montreal 2, Quebec, Canada.

## '56G

Robert Edward Randel has been appointed quality control manager, new departure division of General Motors in Sandusky, Ohio. Bob has an M.S. in Industrial Management. . . . Two other graduates carrying on in the industrial management tradition, David Pitt and Jim Eagles, have gone a step upwards. David, formerly financial studies supervisor in the revenue requirements department of the New England Telephone and Telegraph Company, has been appointed state accounting manager for Vermont. The Pitt family has made Burlington their home. Jim Eagles joined Westinghouse after graduating from Louisiana State University, and has been chosen for the job of manager of manufacturing at Bryant Electric Company, in Bridgeport, Conn.

Meteorologist Virgil R. Noonkester is doing careful research on California's warmth and brightness from 3301 Cowley Way, San Diego. . . . Frank Woodruff is working in Ottawa, Canada. . . . Erstwhile ceramics student, Martin Robbins, is housekeeping in an apartment in New York City at 38 West 69th Street. . . . Herbert Engel, who received his doctorate in Chemical Engineering, is doing research for the Shell Development Corporation in Emeryville, Calif.

John Green has been advanced to the rank of lieutenant commander, U.S. Navy. . . . Dick Hillsley has now permanently settled in Oswego, N.Y., pursuing me-

chanical engineering. Economics scholar Robert Mundell is on a Johns Hopkins University project in Bologna, Italy. . . . Adrian Melissinos is doing investigations in physics in Rochester, N.Y. — Lt. (j.g.) CHARLES T. FREEDMAN, *Secretary*, USN, Special Weapons Division, USS Independence, FPO, New York, N.Y.

## '57

Robert S. Timmins, now a research engineer at Sun Oil Company's Production Research and Development Laboratory, Richardson, Texas, is co-author, with Professor Alan S. Michaels '44 of the Chemical Engineering Department at M.I.T., of a technical paper, which was presented at the 34th annual meeting of the Society of Petroleum Engineers of the American Institute of Mechanical Engineers in Dallas last October. The paper, "Chromatographic Transport of Reverse Wetting Agents and Its Effect Upon Recovery in a Water Flood," describes a study of a method for improving oil recovery using a particular class of surface active agents.

Mrs. Margaretta Doty has collaborated with Professor William D. Kingery '48 of the Ceramics Department on a technical paper which appeared in the August issue of the *Journal of the American Ceramic Society*. Since her graduation from M.I.T., Mrs. Doty has been engaged in free-lance technical writing and research.

Brian W. Faughnan has joined the research staff of RCA Laboratories at the David Sarnoff Research Center in Princeton. He will work in the field of microwave physics, as he did at M.I.T. . . . James R. Connell has been appointed manager of the programs management office at the Owego facility of IBM. . . . John Rinde was recently employed at Sperry Gyroscope Company in the underwater armament division. . . . Ira Holtzman is now working for Mitre Corporation. . . . Harry Margulius, at the M.I.T. Instrumentation Laboratory, reports that Bob Rosenbaum is on the staff at Melpar in Boston.

Alan Budreau has become one of the first candidates for the doctorate in biophysics, in a new graduate program at the Harvard Medical School. . . . John H. Seagrave, now working in the Defense Department, plans to enter medical school in the fall in order to help in the operation of Namkham Hospital in Burma, to which his father has devoted almost 40 years. The hospital, incidentally, is only three miles from the Chinese border and serves 400,000 persons.

On September 26, Joseph Alduino, Jr., was married to Concetta Marie Philippon. . . . Early in October, Francis Turpin's wedding with Caroline Kenny took place. . . . On October 17 Daniel Hynek married Joanne O'Connor. Dave is now working at Lincoln Laboratory. — ALAN M. MAY, *Secretary*, 525 East 81st Street, New York 28, N.Y.; MARTIN R. FORSBERG, *Assistant Secretary*, 11 Scottsfield Road, Allston 34, Mass.

## '59

Since past issues of The Technology Review carried news of those members of our Class who were attending graduate schools, it's about time we gave the working men a break. To date, 162 of the 341 class members, whom I have been able to get information about, are out in industry. This leaves several hundred of us without future plans. A short note can readily explain what you are doing.

Working at various companies throughout the country, we have: D. Afonsky at Hughes Aircraft in Fullerton, Calif.; Dean Andrus at Lockheed Missile System Division in Sunnyvale, Calif.; Charles Baker at Boeing Aircraft in Seattle; Al Beard, his wife, and their baby girl, in Orlando, Fla., at Martin-Orlando; Louis Bellucci at Bendix Aviation in Teterboro, N.J.; Neil Bernstein at Clevite Transistor in Waltham, Mass.; Dick Bishop in Springfield at Monsanto Chemical Company; John Bryant in Needham for Sylvania; Paul Buce in El Segundo, Calif., with Douglas Aircraft; T. S. Budlong in Van Nuys, Calif., with Marquardt Aircraft; Bill Burke at McGraw-Hill; Ed Cheatham at Sperry-Gyroscope; Dick Child at North American Aviation and John Christie at Jet Propulsion Labs.

Elsewhere, we have Louis Cohen working for Sylvania; Miguel Colina with the Peruvian Navy; John Comerford in California with the Division of Highways; Rich Connell with General Precision Labs in Pleasantville, N.Y.; Tom Cook at Jet Propulsion Labs; George Cronin with the U.S. Naval Ordnance Labs; and Bob Cross with the Illinois Bell Telephone Company. More of industry's leaders in the next issue, so stay tuned in to this section of The Review.

Remember, the month of Lincoln, Washington, and St. Valentine will be good to you if you write to your favorite class secretary. (That's me, because I'm '59's only class secretary!) — ROBERT A. MUH, *Secretary*, 8 Merrivale Road, Great Neck, N.Y.

*Significant articles to be published in The Review this spring will include:*

**THE HIGHER LEARNING**, by Huston Smith, Professor of Philosophy

**NEW DEMANDS IN ENGINEERING EDUCATION**, by Harold L. Hazen '24, Professor of Electrical Engineering and Dean of the Graduate School

# UHDE PRILLING PROCESSES

AMMONIUM NITRATE  
AMMONIUM NITRATE-LIMESTONE  
COMPOUND FERTILIZERS  
SPECIAL PRODUCTS  
UREA



Further information may be obtained from

## HOECHST-UHDE CORPORATION

350 Fifth Avenue, New York 1, N. Y.  
8204 Empire State Bldg.

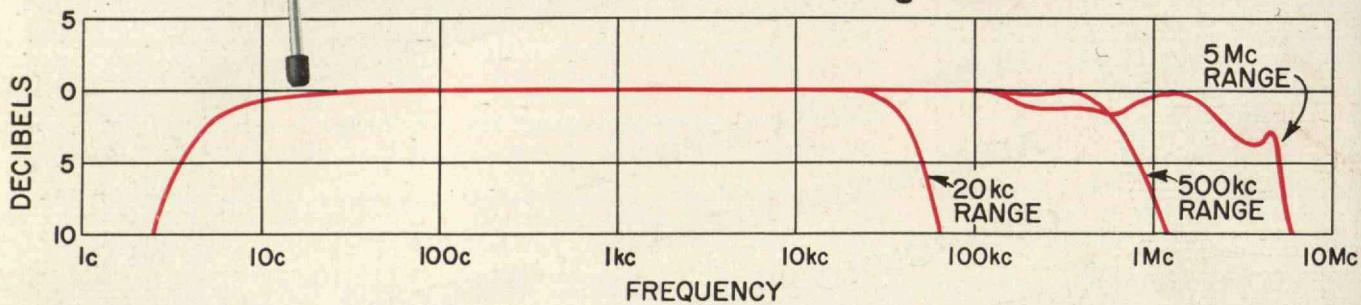
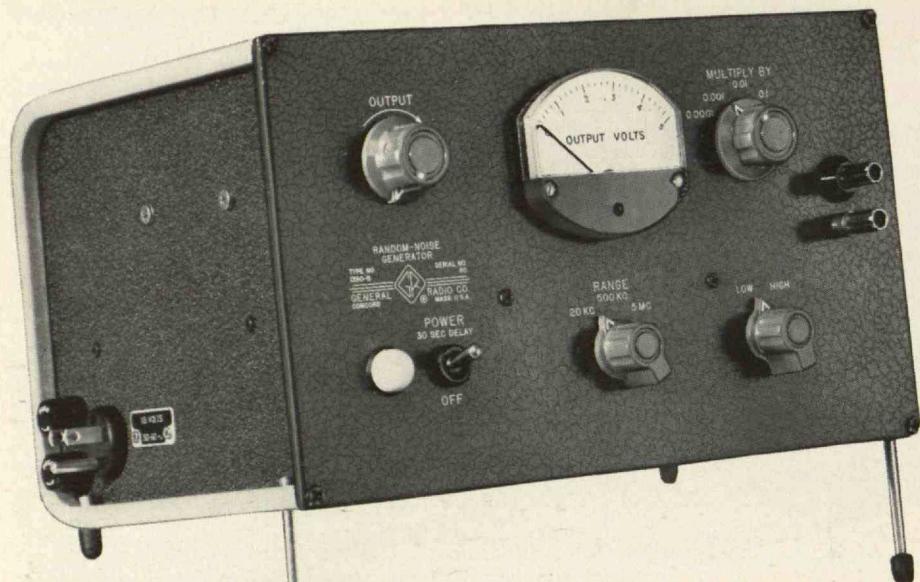
CHEMICAL  
PROCESSES

PLANT  
DESIGN



# NEW Random- Noise Generator

Type 1390-B . . . \$295



## Incorporates these wanted features:

- ★ Wide-Band Noise of Uniform Spectrum Level
- ★ Three Frequency Bands — 20c to 20 kc; 20c to 500 kc; 20c to 5 Mc
- ★ High Output Level — at least 3v for 20-kc range, 2v for 500-kc range, and 1v for 5-Mc range
- ★ Extended low-frequency range down to 5 cps.
- ★ Built-in 80-db attenuator — supplements output meter to provide metered output levels from over 3 volts to below 30  $\mu$ v.
- ★ Automatic time-delay relay in on-off switch circuit insures long life for noise-producing gas tube.
- ★ Built-in extendible legs tilt panel for easy viewing.
- ★ Panel extensions supplied for relay-rack mounting.

The Random-Noise Generator's amplitude distribution closely approximates the statistical amplitude distribution of speech, music, and many other sounds and electrical disturbances which occur naturally. Consequently, this instrument is extremely useful in obtaining realistic measurements of the performance of audio-frequency equipment of all types. Moreover, since noise is a common form of interference limiting the threshold of electrical operation, a controlled noise generator can be extremely useful for measurements of communications systems and detection apparatus.

The Random-Noise Generator is also widely used to drive shake tables for mechanical testing; to test microphones and speakers in the acoustics laboratory; for study of filter characteristics; and in transmission-engineering work involving crosstalk measurements.

**Write for Complete Information**

## GENERAL RADIO COMPANY

Since 1915 — Manufacturers of Electronic Apparatus for Science and Industry

WEST CONCORD, MASSACHUSETTS

NEW YORK AREA: Tel. N. Y. WOrth 4-2722, N. J. WHitney 3-3140 CHICAGO: Tel. Village 8-9400

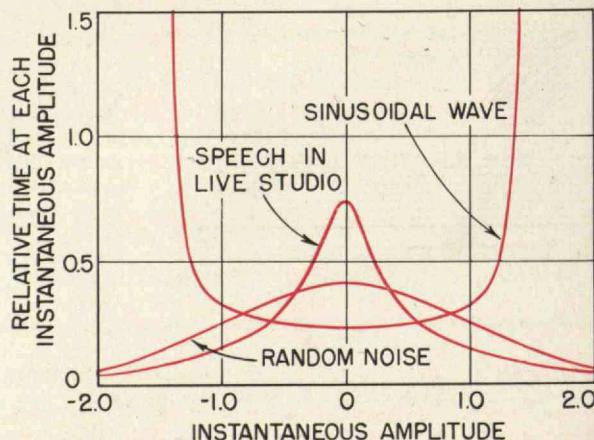
PHILADELPHIA: Tel. HAncock 4-7419

SAN FRANCISCO: Tel. WHitecliff 8-8233

WASHINGTON, D. C.: Tel. JUNiper 5-1088

LOS ANGELES 38: Tel. HOLlywood 9-6201

In CANADA, TORONTO: Tel. CHerry 6-2171



We started selling binding posts and "banana" Type 274 Plugs in 1923, and they are still compatible with the tens of thousands of their modern counterparts sold by us this year. Incidentally, the  $\frac{3}{4}$ " binding post spacing first introduced by GR is an industry standard today.